

Logon

\*\*\* It is now 3/28/09 4:11:51 PM \*\*\*

## **Welcome to DialogLink - Version 5**

### **Revolutionize the Way You Work!**

### **New on Dialog**

#### **Order Patent and Trademark File Histories Through Dialog**

*Thomson File Histories* are now available directly through *Dialog*. Combined with the comprehensive patent and trademark information on *Dialog*, file histories give you the most complete view of a patent or trademark and its history in one place. When searching in the following patent and trademark databases, a link to an online order form is displayed in your search results, saving you time in obtaining the file histories you need.

*Thomson File Histories* are available from the following *Dialog* databases:

- CLAIMS/Current Patent Legal Status (File 123)
- CLAIMS/U.S. Patents (File 340)
- Chinese Patent Abstracts in English (File 344)
- Derwent Patents Citation Index (File 342)
- Derwent World Patents Index (for users in Japan) (File 352)
- Derwent World Patents Index First View (File 331)
- Derwent World Patents Index (File 351)
- Derwent World Patents Index (File 350)
- Ei EnCompassPat (File 353)
- European Patents Fulltext (File 348)
- French Patents (File 371)
- German Patents Fulltext (File 324)
- IMS Patent Focus (File 447, 947)
- INPADOC/Family and Legal Status (File 345)
- JAPIO - Patent Abstracts of Japan (File 347)
- LitAlert (File 670)
- U.S. Patents Fulltext (1971-1975) (File 652)

- U.S. Patents Fulltext (1976-present) (File 654)
- WIPO/PCT Patents Fulltext (File 349)
- TRADEMARKSCAN - U.S. Federal (File 226)

#### **DialogLink 5 Release Notes**

New features available in the latest release of DialogLink 5 (August 2006)

- Ability to resize images for easier incorporation into DialogLink Reports
- New settings allow users to be prompted to save Dialog search sessions in the format of their choice (Microsoft Word, RTF, PDF, HTML, or TEXT)
- Ability to set up Dialog Alerts by Chemical Structures and the addition of Index Chemicus as a structure searchable database
- Support for connections to STN Germany and STN Japan services

Show Preferences for details

? Help Log On Msg

\*\*\* ANNOUNCEMENTS \*\*\*

\*\*\*

\*\*\* FREE FILE OF THE MONTH: EMBASE (Files 72 ,73)

Each month Dialog offers an opportunity to try out new or unfamiliar sources by offering \$100 of free searching (either DialUnits or connect time) in one specific file. Output and Alerts charges are not included. For more details visit: <http://www.dialog.com/freefile/> and then take a moment to get familiar with another great Dialog resource.

\*\*\* "Thomson File Histories" are now available directly through Dialog in selected patent and trademark files. Combined with the comprehensive patent and trademark information on Dialog, file histories give you the most complete view of a patent or trademark and its history in one place. When searching in one of the patent and trademark databases, a link to an online order form is displayed

in your search results, saving you time in obtaining the file histories you need. See HELP FILEHIST for more information about how to use the link and a list of files that contain the link.

#### NEW FILE

\*\*\*File 651, TRADEMARKSCAN(R) - China. See HELP NEWS 651 for details.

#### RESUMED UPDATING

\*\*\*File 523, D&B European Financial Records

\*\*\*

#### RELOADS COMPLETED

\*\*\*Files 154&155, MEDLINE(R)

\*\*\*File 227, TRADEMARKSCAN(R) - Community Trademarks

\*\*\*

#### FILES RENAMED

\*\*\*File 321, PLASPEC now known as Plastic Properties Database

\*\*\*

#### FILES REMOVED

\*\*\*File 388, PEDS: Defense Program Summaries

\*\*\*File 588, DMS-FI Contract Awards

>>>For the latest news about Dialog products, services, content<<<  
>>>and events, please visit What's New from Dialog at <<<  
>>><http://www.dialog.com/whatsnew/>. You can find news about <<<  
>>>a specific database by entering HELP NEWS <file number>. <<<

? Help Off Line

\* \* \*

Connecting to Rob Pond - Dialog - 264751

Connected to Dialog via SMS00403240

? B 15, 9, 610, 810, 275, 476, 624, 621, 636, 613, 813, 16, 160, 634, 148, 20, 35, 583,  
65, 2, 347, 348, 349, 474, 475, 99, 256, 635, 570, PAPERSMJ, PAPERSEU, 47

>>>W: 476 does not exist

1 of the specified files is not available

[File 15] **ABI/Inform(R)** 1971-2009/Mar 26  
(c) 2009 ProQuest Info&Learning. All rights reserved.

[File 9] **Business & Industry(R)** Jul/1994-2009/Mar 26  
(c) 2009 Gale/Cengage. All rights reserved.

[File 610] **Business Wire** 1999-2009/Mar 28  
(c) 2009 Business Wire. All rights reserved.  
*\*File 610: File 610 now contains data from 3/99 forward. Archive data (1986-2/99) is available in File 810.*

[File 810] **Business Wire** 1986-1999/Feb 28  
(c) 1999 Business Wire . All rights reserved.

[File 275] **Gale Group Computer DB(TM)** 1983-2009/Mar 04  
(c) 2009 Gale/Cengage. All rights reserved.

[File 624] **McGraw-Hill Publications** 1985-2009/Mar 27  
(c) 2009 McGraw-Hill Co. Inc. All rights reserved.

[File 621] **Gale Group New Prod.Annou.(R)** 1985-2009/Feb 23  
(c) 2009 Gale/Cengage. All rights reserved.

[File 636] **Gale Group Newsletter DB(TM)** 1987-2009/Mar 09  
(c) 2009 Gale/Cengage. All rights reserved.

[File 613] **PR Newswire** 1999-2009/Mar 28  
(c) 2009 PR Newswire Association Inc. All rights reserved.  
*\*File 613: File 613 now contains data from 5/99 forward. Archive data (1987-4/99) is available in File 813.*

[File 813] **PR Newswire** 1987-1999/Apr 30  
(c) 1999 PR Newswire Association Inc. All rights reserved.

[File 16] **Gale Group PROMT(R)** 1990-2009/Mar 09  
(c) 2009 Gale/Cengage. All rights reserved.  
*\*File 16: UD/banner does not reflect last processed date*

[File 160] **Gale Group PROMT(R)** 1972-1989  
(c) 1999 The Gale Group. All rights reserved.

[File 634] **San Jose Mercury** Jun 1985-2009/Mar 27  
(c) 2009 San Jose Mercury News. All rights reserved.

[File 148] **Gale Group Trade & Industry DB** 1976-2009/Mar 13  
(c) 2009 Gale/Cengage. All rights reserved.  
*\*File 148: The CURRENT feature is not working in File 148. See HELP NEWS148.*

[File 20] **Dialog Global Reporter** 1997-2009/Mar 28  
(c) 2009 Dialog. All rights reserved.

[File 35] **Dissertation Abs Online** 1861-2009/Feb  
(c) 2009 ProQuest Info&Learning. All rights reserved.

[File 583] **Gale Group Globalbase(TM)** 1986-2002/Dec 13  
(c) 2002 Gale/Cengage. All rights reserved.  
*\*File 583: This file is no longer updating as of 12-13-2002.*

[File 65] **Inside Conferences** 1993-2009/Mar 27  
(c) 2009 BLDSC all rts. reserv. All rights reserved.

[File 2] **INSPEC** 1898-2009/Mar W4  
(c) 2009 Institution of Electrical Engineers. All rights reserved.

[File 347] **JAPIO** Dec 1976-2008/Oct(Updated 090220)  
(c) 2009 JPO & JAPIO. All rights reserved.

[File 348] **EUROPEAN PATENTS** 1978-200911  
(c) 2009 European Patent Office. All rights reserved.

[File 349] **PCT FULLTEXT** 1979-2009/UB=20090305|UT=20090226  
(c) 2009 WIPO/Thomson. All rights reserved.

[File 474] **New York Times Abs** 1969-2009/Mar 27  
(c) 2009 The New York Times. All rights reserved.

[File 475] **Wall Street Journal Abs** 1973-2009/Mar 27  
(c) 2009 The New York Times. All rights reserved.

[File 99] **Wilson Appl. Sci & Tech Abs** 1983-2009/Feb  
(c) 2009 The HW Wilson Co. All rights reserved.

[File 256] **TecInfoSource** 82-2009/Oct  
(c) 2009 Info.Sources Inc. All rights reserved.

[File 635] **Business Dateline(R)** 1985-2009/Mar 28  
(c) 2009 ProQuest Info&Learning. All rights reserved.

[File 570] **Gale Group MARS(R)** 1984-2009/Mar 06  
(c) 2009 Gale/Cengage. All rights reserved.

[File 387] **The Denver Post** 1994-2009/Mar 27  
(c) 2009 Denver Post. All rights reserved.

[File 471] **New York Times Fulltext** 1980-2009/Mar 27  
(c) 2009 The New York Times. All rights reserved.

[File 492] **Arizona Repub/Phoenix Gaz** 19862002/Jan 06  
(c) 2002 Phoenix Newspapers. All rights reserved.

*\*File 492: File 492 is closed (no longer updating). Use Newsroom, Files 989 and 990, for current records.*

[File 494] **St LouisPost-Dispatch** 1988-2009/Mar 26  
(c) 2009 St Louis Post-Dispatch. All rights reserved.

[File 631] **Boston Globe** 1980-2009/Mar 27  
(c) 2009 Boston Globe. All rights reserved.

[File 633] **Phil.Inquirer** 1983-2009/Mar 28  
(c) 2009 Philadelphia Newspapers Inc. All rights reserved.

[File 638] **Newsday/New York Newsday** 1987-2009/Mar 22  
(c) 2009 Newsday Inc. All rights reserved.

[File 640] **San Francisco Chronicle** 1988-2009/Mar 22  
(c) 2009 Chronicle Publ. Co. All rights reserved.

[File 641] **Rocky Mountain News** Jun 1989-2009/Jan 16

(c) 2009 Scripps Howard News. All rights reserved.

*\*File 641: This file has ceased updating*

[File 702] **Miami Herald** 1983-2009/Mar 28

(c) 2009 The Miami Herald Publishing Co. All rights reserved.

[File 703] **USA Today** 1989-2009/Mar 26

(c) 2009 USA Today. All rights reserved.

[File 704] **(Portland)The Oregonian** 1989-2009/Mar 26

(c) 2009 The Oregonian. All rights reserved.

[File 713] **Atlanta J/Const.** 1989-2009/Mar 08

(c) 2009 Atlanta Newspapers. All rights reserved.

[File 714] **(Baltimore) The Sun** 1990-2009/Mar 26

(c) 2009 Baltimore Sun. All rights reserved.

[File 715] **Christian Sci.Mon.** 1989-2009/Mar 27

(c) 2009 Christian Science Monitor. All rights reserved.

[File 725] **(Cleveland)Plain Dealer** Aug 1991-2009/Mar 26

(c) 2009 The Plain Dealer. All rights reserved.

[File 735] **St. Petersburg Times** 1989- 2009/Mar 25

(c) 2009 St. Petersburg Times. All rights reserved.

[File 477] **Irish Times** 1999-2009/Mar 28

(c) 2009 Irish Times. All rights reserved.

[File 710] **Times/Sun.Times(London)** Jun 1988-2009/Mar 25

(c) 2009 Times Newspapers. All rights reserved.

[File 711] **Independent(London)** Sep 1988-2006/Dec 12

(c) 2006 Newspaper Publ. PLC. All rights reserved.

*\*File 711: This file does not update. See NewsRoom for full daily coverage from many European sources.*

[File 756] **Daily/Sunday Telegraph** 2000-2009/Mar 28

(c) 2009 Telegraph Group. All rights reserved.

[File 757] **Mirror Publications/Independent Newspapers** 2000-2009/Mar 27

(c) 2009. All rights reserved.

[File 47] **Gale Group Magazine DB(TM)** 1959-2009/Mar 17

(c) 2009 Gale/Cengage. All rights reserved.

? S AU=(hendel, c OR hendel c? OR catherine(2N)hendel) OR BY=(catherine(2N)hendel)

>>>W: One or more prefixes are unsupported

or undefined in one or more files.

Input error: Numeric characters expected

```
      0    AU=HENDEL, C
      0    AU=HENDEL C?
65064    AU=CATHERINE
      404   AU=HENDEL
      0    AU=CATHERINE(2N)AU=HENDEL
2280     BY=CATHERINE
      0    BY=HENDEL
      0    BY=CATHERINE(2N)BY=HENDEL
S1       0    S AU=(HENDEL, C OR HENDEL C? OR CATHERINE(2N)HENDEL) OR
BY=(CATHERINE(2N)HENDEL)
```

```
? S AU=(lin, C OR lin C? OR CATHERINE(2N)lin) OR BY=(CATHERINE(2N)lin)
```

```
>>>W: One or more prefixes are unsupported
      or undefined in one or more files.
```

Input error: Numeric characters expected

```
      38    AU=LIN, C
      2693   AU=LIN C?
65064    AU=CATHERINE
24175    AU=LIN
      11    AU=CATHERINE(2N)AU=LIN
2280     BY=CATHERINE
      16    BY=LIN
      0    BY=CATHERINE(2N)BY=LIN
S2       2742   S AU=(LIN, C OR LIN C? OR CATHERINE(2N)LIN) OR BY=(CATHERINE(2N)LIN)
```

```
? S AU=((lin(w)HENDEL), C OR (lin(w)HENDEL) C? OR CATHERINE(2N)(lin(w)HENDEL)) OR
BY=(CATHERINE(2N)(lin(w)HENDEL))
```

```
>>>W: Invalid syntax
```

```
>>>E: There is no result
```

```
? S AU=(LIN(w)HENDEL, C OR LIN(W)HENDEL C? OR CATHERINE(2N)LIN(W)HENDEL) OR
BY=(CATHERINE(2N)LIN(W)HENDEL)
```

```
>>>W: One or more prefixes are unsupported
```

or undefined in one or more files.

Input error: Numeric characters expected

```
24175  AU=LIN
      0  AU=HENDEL, C
      0  AU=LIN(W)AU=HENDEL, C
24175  AU=LIN
      0  AU=HENDEL C?
      0  AU=LIN(W)AU=HENDEL C?
65064  AU=CATHERINE
24175  AU=LIN
      404 AU=HENDEL
      0  AU=CATHERINE(2N)AU=LIN(W)AU=HENDEL
2280   BY=CATHERINE
      16 BY=LIN
      0  BY=HENDEL
      0  BY=CATHERINE(2N)BY=LIN(W)BY=HENDEL
```

S3 0 S AU=(LIN(W)HENDEL, C OR LIN(W)HENDEL C? OR CATHERINE(2N)LIN(W)HENDEL) OR  
BY=(CATHERINE(2N)LIN(W)HENDEL)

? d s

Set	Items	Description
S1	0	S AU=(HENDEL, C OR HENDEL C? OR CATHERINE(2N)HENDEL) OR BY=(CATHERINE(2N)HENDEL)
S2	2742	S AU=(LIN, C OR LIN C? OR CATHERINE(2N)LIN) OR BY=(CATHERINE(2N)LIN)
S3	0	S AU=(LIN(W)HENDEL, C OR LIN(W)HENDEL C? OR CATHERINE(2N)LIN(W)HENDEL) OR BY=(CATHERINE(2N)LIN(W)HENDEL)

? s s2 and (virtual(w)(world or worlds or reality or realities or showroom or showrooms  
or gallery or galleries or environmet or environments))

Processing

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```
      2742  S2
1913472  VIRTUAL
```



31231799 WORLD  
 525715 WORLDS  
 2741109 REALITY  
 366690 REALITIES  
 251992 SHOWROOM  
 137772 SHOWROOMS  
 897316 GALLERY  
 587547 GALLERIES  
 74 ENVIRONMET  
 2024462 ENVIRONMENTS

189959 VIRTUAL(W)(((((((WORLD OR WORLDS) OR REALITY) OR REALITIES) OR SHOWROOM) OR SHOWROOMS) OR GALLERY) OR GALLERIES) OR ENVIRONMET) OR ENVIRONMENTS)

S4 8 S S2 AND (VIRTUAL(W) (WORLD OR WORLDS OR REALITY OR REALITIES OR SHOWROOM OR SHOWROOMS OR GALLERY OR GALLERIES OR ENVIRONMET OR ENVIRONMENTS))

? t s4/k/all

4/K/1 (Item 1 from file: 2)

INSPEC

(c) 2009 Institution of Electrical Engineers. All rights reserved.

**Author** Wang Yong; Wang Bangzhi; **Lin Changnian**

**Abstract:** By using the **virtual reality** technology, the 3D technology, the multimedia technology and the network technology, the long-distance hypothetical...

4/K/2 (Item 2 from file: 2)

INSPEC

(c) 2009 Institution of Electrical Engineers. All rights reserved.

**Author** Zhai Lei; **Lin Cheng-kai**; Pan Jin-gui

**Descriptors:** ...**virtual reality**;

**Identifiers:**

4/K/3 (Item 3 from file: 2)

INSPEC

(c) 2009 Institution of Electrical Engineers. All rights reserved.

**Author** Hou Jun; Li Wei-qing; **Lin Chang-nian**

**Abstract:** Constituting **virtual-reality** environment for substation simulation system by use of three-dimension graphic technology, the sense reality... ..environment rendering of context scene is proposed. The above-mentioned achievements are successfully applied to **virtual-reality** simulation system of substation.

**Descriptors:** ...**virtual reality**

**Identifiers:** ...**virtual-reality** environment

4/K/4 (Item 4 from file: 2)

INSPEC

(c) 2009 Institution of Electrical Engineers. All rights reserved.

**Title:** Design of research platform on telerobot system based on virtual reality technology

**Author** Chen Junjie; Huang Weiyl; Song Aiguo; Xi Weiyang; **Lin Chun**

**Abstract:** A new design strategy for a research platform of a telepresence telerobot system based on **virtual reality** technology is put forward. The design frame of the system is simply described, and its... ..indispensable experiment base is provided for the research of a telepresence telerobot system based on **virtual reality** technology.

**Descriptors:** ...virtual reality

**Identifiers:** ...virtual reality;

4/K/5 (Item 5 from file: 2)

INSPEC

(c) 2009 Institution of Electrical Engineers. All rights reserved.

**Author** Lin Chi-Fang; Lin Chih-Yang

**Abstract:** ...important in many industrial applications like object modeling, medical diagnosis, CAD/CAM, multi-media, and **virtual reality** systems. However, it takes a lot of effort and cost to develop a high precision...

**Descriptors:** ...virtual reality

**Identifiers:** ...virtual reality;

4/K/6 (Item 1 from file: 348)

EUROPEAN PATENTS

(c) 2009 European Patent Office. All rights reserved.

**Inventor:**

• ...TW)

;;

• Lin, Chih-Mao...

;;

Country		Number		Kind		Date			
Type				Pub. Date		Kind		Text	
Available Text				Language		Update		Word Count	
Total Word Count (Document A)									
Total Word Count (Document B)									
Total Word Count (All Documents)									

**Specification:** ...functions of adding an audio/video special effect, producing a virtual image, creating an animated **virtual reality** or conducting an image interaction. After the webcam is removed, the computer screen cannot display... ..with a user's selected virtual subject to form an animated special effect or a **virtual reality**, so as to improve the interactivity and the fun of communications.

In view of the...

**Inventor:**

- ...TW)  
;;
- Lin, Chih-Mao...  
;;

Country	Number	Kind	Date		
Type		Pub. Date		Kind	Text
Available Text		Language		Update	Word Count
Total Word Count (Document A)					
Total Word Count (Document B)					
Total Word Count (All Documents)					

**Specification:** ...views of a real time playback that combines an actual captured live person and a **virtual reality** world; <FIGREF IDREF=F0005>FIG. 4</FIGREF> is a preliminarily selected continuous view of a... ...image enters into the lens). In a preferred embodiment, a pre-selected mode produces a **virtual reality** character 106 interacted with the live person image 105. It is noteworthy to point out... ...a scene where the live person 104 is located and the interaction between with the **virtual reality** character 106 and the live person image 105 are not preset, but is selected by... ...such that when a pop music is played, the corresponding special effect can load a **virtual reality** character. In the method of integrating data during the playback, a user downloads a media... ...content 201, so as to show the effect of the live person merged into the **virtual reality** world.

Referring to <FIGREF IDREF=F0003>FIGS. 3A</FIGREF> and <FIGREF IDREF=F0004>3B</FIGREF>... ...views of a real time playback that combines an actual captured live person and a **virtual reality** world, an capture device (not shown in the figures) captures a live person image and... ...a readable program of this embodiment is executed, a pre-selected mode will produce a **virtual reality** image such as a portrait, a God statue, a cartoon character, a monster or a **virtual reality** character 402.

The **virtual reality** character 402 will interact with the live person image 401 and be displayed on the... ...400 at real time as shown in <FIGREF IDREF=F0004>FIG. 3B</FIGREF>, and the **virtual reality** character 402 can be moved slightly to the left or right. In the preferred embodiment, the movement of the **virtual reality** character 401 is to climb to the shoulders of the live person image 401 and kiss the cheeks of the live person image. In response with the movements of the **virtual reality** character 402, the live person image 402 produces a blush effect 501 and a joy effect 502. In another example, the **virtual reality** character 402 can cast a spell or practice a witchcraft on the live person image 401. To respond to the movement of the **virtual reality** character 402, the live person image 401 grows a pair of ears 503 on the... ...live person image 401 moves slightly, the ears 503 will move accordingly, so that the **virtual reality** character 402, the live person 401 and various different ef fects are interactive. In this embodiment, the **virtual reality** character 402 casts a spell on the live person image 401, and the head of... ...added onto the hair, such that an interactive effect between the live person and the **virtual reality** object will be produced by repeated recognitions and tracking.

As to the live person, the... ...a configuration as key points for the interactive mode.

In the method for interacting a **virtual reality** character with a live person, the analysis method includes a feature detection, a feature tracking, a gesture analysis and recognition for analyzing the action between the **virtual reality** character and the live person. The feature detection considers the capture of a low-level... ...through a network such as the Internet or an intranet. The players can select a **virtual reality** character from either the player side or the opponent side to give an instruction and remotely control the **virtual reality** character at another end, so as to provide various different visual effects and the result...

4/K/8 (Item 1 from file: 349)

PCT FULLTEXT

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**Patent Applicant/Inventor:**

• LIN Chung-Yu...

Country	Number	Kind	Date
---------	--------	------	------

**Detailed Description:**

...Board.

An automatic searching program can search and collect e-mail accounts in a VR (**Virtual Reality**) system such as a BBS (Bulletin Board System) or message board and discussion area or...

? s pd<19990806

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>>>W: One or more prefixes are unsupported

or undefined in one or more files.

S5 65452976 S PD<19990806

? s (VIRTUAL(2W)(WORLD OR WORLDS OR REALITY OR REALITIES OR room or rooms or SHOWROOM OR SHOWROOMS OR GALLERY OR GALLERIES OR ENVIRONMENT OR ENVIRONMENTS))

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Processing

Processing

1913472 VIRTUAL

31231799 WORLD

525715 WORLDS

2741109 REALITY

366690 REALITIES

7613724 ROOM

1855237 ROOMS

251992 SHOWROOM

137772 SHOWROOMS

897316 GALLERY

587547 GALLERIES

10174616 ENVIRONMENT

2024462 ENVIRONMENTS

S6 246692 S (VIRTUAL(2W)(WORLD OR WORLDS OR REALITY OR REALITIES OR ROOM OR ROOMS  
OR SHOWROOM OR SHOWROOMS OR GALLERY OR GALLERIES OR ENVIRONMENT OR ENVIRONMENTS))

? s s5 and s6 and (commerce or ecommerce or e(w)commerce or shop???? or purchas???? or  
buy???? or bid???? or auction????)

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Processing

Processing

Processing

Processing

Processing

Processing

Processing

Processing

Processing

Processing

Processing

Processing

Processing

65452976 S5

246692 S6

5789471 COMMERCE

173363 ECOMMERCE

20424161 E

5789471 COMMERCE

1756619 E(W)COMMERCE

8431187 SHOP????

12888034 PURCHAS????

15928126 BUY????

6091319 BID????

1558297 AUCTION????

S7 25922 S S5 AND S6 AND (COMMERCE OR ECOMMERCE OR E(W)COMMERCE OR SHOP???? OR PURCHAS???? OR BUY???? OR BID???? OR AUCTION????)

? S s7 and (hotspot???? or hot(w)spot????)

Processing

25922 S7

142956 HOTSPOT????

4754807 HOT

5609417 SPOT????

218148 HOT(W)SPOT????

S8 316 S S7 AND (HOTSPOT???? OR HOT(W)SPOT????)

? S S5 AND S6 AND ((COMMERCE OR ECOMMERCE OR E(W)COMMERCE OR SHOP???? OR PURCHAS???? OR BUY???? OR BID???? OR AUCTION????) (10) (hotspot???? or hot(w)spot????))

>>>W: Invalid syntax

>>>E: There is no result

? S S5 AND S6 AND ((COMMERCE OR ECOMMERCE OR E(W)COMMERCE OR SHOP???? OR PURCHAS???? OR BUY???? OR BID???? OR AUCTION????) (10n) (HOTSPOT???? OR HOT(W)SPOT????))

Processing

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Processing

Processing

Processing

65452976 S5

246692 S6

5789471 COMMERCE

173363 ECOMMERCE

20424161 E

5789471 COMMERCE  
1756619 E(W)COMMERCE  
8431187 SHOP????  
12888034 PURCHAS????  
15928126 BUY????  
6091319 BID????  
1558297 AUCTION????  
142956 HOTSPOT????  
4754807 HOT  
5609417 SPOT????  
218148 HOT(W)SPOT????

11525 (((((((COMMERCE OR ECOMMERCE) OR E(W)COMMERCE) OR SHOP????) OR  
PURCHAS????) OR BUY????) OR BID????) OR AUCTION????) (10N) (HOTSPOT???? OR HOT(W)SPOT????)  
S9 12 S S5 AND S6 AND ((COMMERCE OR ECOMMERCE OR E(W)COMMERCE OR SHOP???? OR  
PURCHAS???? OR BUY???? OR BID???? OR AUCTION????) (10N) (HOTSPOT???? OR HOT(W)SPOT????))

? rd

>>>W: Duplicate detection is not supported for File 347.

Duplicate detection is not supported for File 348.

Duplicate detection is not supported for File 349.

Records from unsupported files will be retained in the RD set.

S10 9 RD (UNIQUE ITEMS)

? t s10/free/all

>>>W: "FREE" is not a valid format name in file(s): 347-349

10/8/1 (Item 1 from file: 15)

ABI/Inform(R)

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01623590 02-74579

**\*\*USE FORMAT 7 OR 9 FOR FULL TEXT\*\***

**Intellectual property in cyberspace**

**Word Count:** 11565 **Length:** 25 Pages

Nov 1997

**Geographic Names:** US

**Descriptors:** Electronic commerce; Internet; Intellectual property; Copyright; Jurisdiction; Federal court decisions; State court decisions; Commercial law

**Classification Codes:** 9190 (CN=United States); 5250 (CN=Telecommunications systems); 4330 (CN=Litigation)



10/8/2 (Item 1 from file: 275)

Gale Group Computer DB(TM)

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02316553 **Supplier Number:** 55225979 (Use Format 7 Or 9 For FULL TEXT )

**RELIVING THE PAST.(NTT's InterSpace VR technology creates Exploring Edo program)(Technology Information)**

June , 1999

**Word Count:** 1287 **Line Count:** 00104

**Company Names:** Nippon Denshin Denwa KK--Products

**Geographic Codes/Names:** 9JAPA Japan

**Descriptors:** Virtual reality device; Virtual reality technology; Technology application

**Event Codes/Names:** 330 Product information

**Product/Industry Names:** 3573253 (Virtual Reality Output & Display Devices)

**NAICS Codes:** 334119 Other Computer Peripheral Equipment Manufacturing

**File Segment:** CD File 275

10/8/3 (Item 2 from file: 275)

Gale Group Computer DB(TM)

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01951880 **Supplier Number:** 18414890 (Use Format 7 Or 9 For FULL TEXT )

**The game room. (Pop Rocket's Total Distortion adventure game, Discovery Channel Multimedia's Connections adventure game, LucasArts Entertainment's X-Wing Collector's CD-ROM simulation game)(Brief Article) (Software Review)(Column)(Evaluation)**

August , 1996

**Word Count:** 1220 **Line Count:** 00092

**Company Names:** Pop Rocket Inc.--Products; Discovery Channel Multimedia--Products; LucasArts Entertainment Co.--Products

**Descriptors:** Action Game; Hardware Multiproduct Review; Adventure Game; Simulation Game

**SIC Codes:** 7372 Prepackaged software

**Trade Names:** Total Distortion (Action game)--Evaluation; James Burke's Connections (Adventure game)--Evaluation; X-Wing Collector's CD-ROM (Simulation game)-- Evaluation

**File Segment:** CD File 275

10/8/4 (Item 1 from file: 16)

Gale Group PROMT(R)

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04600631 **Supplier Number:** 46766504 (USE FORMAT 7 FOR FULLTEXT)

**OLiVR's Appeal**

Oct 1 , 1996

**Word Count:** 613

**Publisher Name:** CMP Publications, Inc.

**Company Names:** \*On-Line Interactive Virtual  
**Event Names:** \*330 (Product information )  
**Geographic Names:** \*1USA (United States )  
**Product Names:** \*7372440 (Graphics Software)  
**Industry Names:** BUSN (Any type of business); CMPT (Computers and Office Automation )  
**NAICS Codes:** 51121 (Software Publishers )  
**Special Features:** COMPANY

10/8/6 (Item 1 from file: 492)  
Arizona Repub/Phoenix Gaz  
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09523232

### **MILL AVENUE'S SLIDE WORRIES MERCHANTS EXPLANATIONS VARY WITH SHOPS IN DOWNTOWN TEMPE**

Friday, January 23, 1998  
**Word Count:** 1,250

10/8/7 (Item 2 from file: 492)  
Arizona Repub/Phoenix Gaz  
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09518208

### **MILL AVE. SLOWS STRIDE SLACK SALES DRAW GRUMBLES FROM SOME MERCHANTS**

Sunday, January 18, 1998  
**Word Count:** 1,485

10/8/8 (Item 1 from file: 702)  
Miami Herald  
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09543237

### **VIDEO ARCADE WINS ZONING OK IN SUNRISE**

Thursday, February 12, 1998  
**Word Count:** 354

10/8/9 (Item 2 from file: 702)  
Miami Herald  
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09541008

## **BUSINESS OWNERS MAY APPLY FOR GRANTS**

Tuesday, February 10, 1998

**Word Count:** 847

>>>W: "FREE" is not a valid format name in file(s): 347-349

10/8/9 (Item 2 from file: 702)

Miami Herald

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09541008

## **BUSINESS OWNERS MAY APPLY FOR GRANTS**

Tuesday, February 10, 1998

**Word Count:** 847

? t s10/k/all

10/K/1 (Item 1 from file: 15)

ABI/Inform(R)

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**Text:**

...and trademark law in cyberspace is a review of the issue of jurisdiction in the **virtual world**. The question of personal jurisdiction on the Internet is common to intellectual property, defamation, pornography ...

...tested. These issues are covered in the final section of this Article.

### PERSONAL, JURISDICTION INA **VIRTUAL WORLD**

An overriding concern in litigation regarding intellectual property as well as other rights and obligations...society, however, and as the Internet continues to grow in importance as a medium of **commerce**, the intersection of these two areas will be the **hot spot** to watch.

The sources for information are plentiful. The ABA's Section of Business Law...

10/K/2 (Item 1 from file: 275)  
Gale Group Computer DB(TM)  
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**Abstract:** ...The VR program, called Exploring Edo, was developed with NTT's InterSpace technology, a multiuser **virtual-reality** platform that incorporates 3D environments, streaming audio and video, and high-resolution digital photos.

**Abstract:**

...computer kiosks adjacent to the exhibit, museum-goers were transported back in time with a **virtual-reality** program that enabled them to visit Edo Castle (the ruling shogun's residence and audience...

...outside of Japan--and some that are rarely exhibited even within Japan," says Rob Rothfarb, **virtual-worlds** creative director for Nippon Telegraph and Telephone Corp.'s (NTT) Multimedia Communications Laboratories (MCL; Mill Valley, CA), creators of the **virtual** Edo. "The **gallery** wanted a supplemental experience to help put those items into architectural and cultural context. They...

...The VR program, called Exploring Edo, was developed with NTT's InterSpace technology, a multiuser **virtual-reality** platform that incorporates 3D environments, streaming audio and video, and high-resolution digital photos. "We...

...California, along with historians and curators from the National Gallery of Art, to conceptualize the **virtual worlds** so we would know exactly what we were trying to build in 3D," Rothfarb says...

...pop-up displays a clip from a Kabuki play or puppet theater performance, while a **hot spot** in the **shopping** district (Nihonbashi) environment displays a video showing how the various goods--wood crafts, sweets, and...

**Descriptors:** Virtual reality device... ..Virtual reality technology

**Named Persons:**

**Product/Industry Names:** 3573253 (Virtual Reality Output & Display Devices)

**SIC Codes:**

**19990601**

10/K/3 (Item 2 from file: 275)

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...study in a small country house, the courtyard of a medieval castle, and an electronics **shop** -- moving your cursor around to find **hot spots**. The **hot spots** reveal clues or the actual items (seven on each of five levels) you collect to...

...is that there isn't any depth to the story line or complexity to the **virtual world** you've stepped into -- it's a set of random sites with random items.

Although...

**19960800**

10/K/4 (Item 1 from file: 16)  
Gale Group PROMT(R)  
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-

OLiVR is the brainchild of On-Line Interactive **Virtual Reality** Corp. and the secret of its allure is the way it forges multiple technologies-online...

...example, selecting clothing from a particular designer to showcase based on the user's past **buying** patterns. The software also supports **Hot Spots**, so that users can click on part of an object and get related text about...

...support audio. Work also is under way to see if OLiVR can work with the **Virtual Reality** Modeling Language (VRML), so that photo-realistic OLiVR-created objects could exist within the graphical...

**19961001**

10/K/5 (Item 1 from file: 349)  
Fulltext available through: [Order File History](#)  
PCT FULLTEXT  
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	Country	Number	Kind	Date
--	---------	--------	------	------

Patent				19
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#### Detailed Description:

...applications and processes,  
communications links to other computers, function menus, high definition  
television signals, and **virtual reality** environments.

1 5 A static target 1022 is not a media element 1690, but controls...shoreline highway, to obtain further  
information about the car. Other targets, executed when the car **hotspot** is actuated, may include a **purchase** order  
form or a chart of current revenue figures related to sales of the car...003 may support media file types  
including: Video, Image, Text, Sound, Music, HTML, Executable, Animation,  
**Virtual Reality** Modeling Language (VRML), QuickTime VR (TM), and SQL  
queries used as targets.

Database Intearatio  
In...

10/K/6 (Item 1 from file: 492)  
Arizona Repub/Phoenix Gaz  
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#### Text:

...place where higher rents are eagerly paid for a chance to be in a  
premier **hot spot** of hip **shops** and restaurants that  
draw huge crowds well into the evening.

...who have been there for several years, such as Harkins Theatres and  
Sweet Daddy's **Virtual Reality** Arcade, and from such  
20-plus-year veterans as Changing Hands Bookstore and the Spaghetti...

980123

10/K/7 (Item 2 from file: 492)  
Arizona Repub/Phoenix Gaz  
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#### Text:

...place where higher rents are eagerly paid for a chance to be in a premiere **hot spot** of hip **shops** and restaurants that draw huge crowds well into the evening.

...who have been there for several years, such as Harkins Theatres and Sweet Daddy's **Virtual Reality** Arcade, and from such 20-plus-year veterans as Changing Hands Bookstore and the Spaghetti...

**980118**

10/K/8 (Item 1 from file: 702)

Miami Herald

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-

...in Las Vegas, Tempe, Ariz. and Seattle and another is under construction at the new **Shops** of Sunset Place in South Miami.

The interactive entertainment **hot spots** offer patrons an opportunity to surf a Yamaha WaveRunner, ride a racehorse, slalom down the ...

...Rock, the world's tallest free-standing rock-climbing structure. Along with the latest in **virtual reality**, GameWorks offers such classics as PacMan, Asteroids and Centipede and oldies but goodies like pool...

**980212**

10/K/9 (Item 2 from file: 702)

Miami Herald

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-

...outlets in Las Vegas, Tempe, Ariz. and Seattle. Another is under construction at the new **Shops** of Sunset Place in South Miami.

The interactive entertainment **hot spot** lets patrons

experience the latest in **virtual reality**, such as riding a water bike, riding a racehorse and skiing the Alps. GameWorks also...

**980210**

? ts10/7/4-5

10/7/4 (Item 1 from file: 16)

Gale Group PROMT(R)

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04600631 **Supplier Number: 46766504 (THIS IS THE FULLTEXT)**

### **OLiVR's Appeal**

Network Computing , p 30

Oct 1 , 1996

#### **Text:**

Simply stated, OLiVR has sex appeal. Playboy and Penthouse have already expressed an interest in it. So have members of the auto industry. Glitzy advertisers want it. Even hardware-component catalog providers think it can add sizzle to their back panels and heat up sales.

OLiVR is the brainchild of On-Line Interactive **Virtual Reality** Corp. and the secret of its allure is the way it forges multiple technologies-online photo realism, video streaming and interactive objects-into one to create something entirely new online. OLiVR lets users produce animated and interactive "movies" from ordinary still photographs. Using this technology, Webmasters can "photograph" an object from an assortment of angles and then depict a rotating view of the object. The viewer controls the rotation process and can even zoom in for detail or zoom out for a more comprehensive look.

Streaming helps sidestep the frustrating wait modem users often endure for graphics-intensive pages. Images appear immediately, even at low connection speeds, while resolution of the depicted object increases incrementally with time, much like an Internet version of a Polaroid snapshot. At high speeds, a complete high-resolution depiction occurs as quickly as a GIF or JPEG image.

These basic capabilities are part of the \$495 OLiVR Production Toolkit, for which beta tests began in August; delivery is scheduled for perhaps as early as this month. The OLiVR Server, starting at \$2,500, is slated to become available at the same time and adds capabilities to the



tool kit. It will let users change out parts of an image, color or other details on the fly. It will also interface to personalization databases that can determine how an image should be tailored for a particular user—for example, selecting clothing from a particular designer to showcase based on the user's past **buying** patterns. The software also supports **Hot Spots**, so that users can click on part of an object and get related text about it. By its fourth-quarter release date, the software is slated to support audio. Work also is under way to see if OLivR can work with the **Virtual Reality** Modeling Language (VRML), so that photo-realistic OLivR-created objects could exist within the graphical VRML world.

Mike Geller, OLivR product manager, said in September that "the people most interested in the technology are Netscape and RealAudio, and we are exploring partnering or joint marketing" with these companies. On the user front, equal interest seems to be coming from Web developers, advertisers and catalog companies.

The technology also has drawn inquiries from the sex-magazine industry—where OLivR's ability to rotate, change-out and zoom-in on models would bring a certain cachet. Geller says the company hasn't yet figured out what to do about all the interest it has generated among this group and has yet to market proactively to this crowd. He adds, though, that "those are the guys who know how to make money on the Web and to get plug-ins out there."

The plug-in nature of OLivR, in fact, is one of the obstacles in its path. Geller promises that the OLivR Internet client software will always be free, but for now it must be downloaded and installed from the OLivR Web site ([www.olivr.com](http://www.olivr.com)). Helping users through installations is OLivR's biggest problem. Today the software works as a plug-in on Netscape Navigator 2.0 and Microsoft Internet Explorer 3.0; Macintosh versions are slated to ship this quarter, and OLivR eventually should work with Netscape Communications' LiveConnect and Microsoft Corp.'s ActiveX, as well.

Of course, OLivR doesn't have to be all business. Imagine using OLivR to review the various hairstyles sported by first lady Hillary Clinton. Better yet, try them out on Bob Dole or even Dogbert.

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10/7/5 (Item 1 from file: 349)

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00479470

**STREAMING HYPERVIDEO AND DYNAMIC HYPERVIDEO**  
**SEQUENCE HYPERVIDEO ET HYPERVIDEO DYNAMIQUE**

**Patent Applicant/Patent Assignee:**

- **VEON INC**
- **EFRAAT Eliahu**
- **PELEG Avner**
- **HERMUSH Yossi A**
- **BORENSTEIN Elhanan A**
- **KERET Rottem**
- **VERED Eran**
- **BERENSON Adi**
- **LAZAR Amir**
- **ROSEN Uri**
- **PELEG Ehud**
- **WELLER Schmuel**

**Inventor(s):**

- **EFRAAT Eliahu**
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- **HERMUSH Yossi A**
- **BORENSTEIN Elhanan A**
- **KERET Rottem**

- **VERED Eran**
- **BERENSON Adi**
- **LAZAR Amir**
- **ROSEN Uri**
- **PELEG Ehud**
- **WELLER Schmuel**

	Country	Number	Kind	Date
Patent	WO	9910822	A1	<b>19990304</b>
Application	WO	98US17444		19980821
Priorities	US	9756928		19970822

**Designated States:** (Protection type is "Patent" unless otherwise stated - for applications prior to 2004)

AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY,  
CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI,  
GB, GE, GH, GM, HR, HU, ID, IL, IS, JP,  
KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT,  
LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ,  
PL, PT, RO, RU, SD, SE, SG, SI, SK, SL,  
TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU,  
ZW, GH, GM, KE, LS, MW, SD, SZ, UG, ZW,  
AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT,  
BE, CH, CY, DE, DK, ES, FI, FR, GB, GR,  
IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF,  
CG, CI, CM, GA, GN, GW, ML, MR, NE, SN,  
TD, TG

#### **Main International Patent Classes (Version 7):**

<b>IPC</b>	<b>Level</b>
G06F-017/30	Main
Publication Language:	English
Filing Language:	
Fulltext word count:	72879

#### **English Abstract:**

A data stream comprises a hypervideo data stream including hypervideo data associated with an instance in time in a video. In another embodiment, the hypervideo data stream further comprises target data associated with the instance

in time. A method of creating a multimedia stream comprises authoring a hypervideo, including a video. Hypervideo parameters are exported into a hypervideo data stream of a media file. In another embodiment, a data stream of the video is exported into the media file. In one embodiment, a method for authoring a hypervideo that is dynamic, comprises authoring a hypervideo, and defining a hypervideo parameter that may vary during the hypervideo performance. In another embodiment, an event handler is defined that issues a command to vary the parameter upon receiving an event message from the hypervideo. In one embodiment, a method of performing a hypervideo that is dynamic, comprises performing a hypervideo, and varying a parameter of the hypervideo during the performance of the hypervideo. In another embodiment, the parameter is varied upon the occurrence of an event in the hypervideo. In one embodiment, a hypervideo system comprises a dynamic hypervideo server. A player is coupled to the dynamic hypervideo server. A media server is coupled to the player.

### **French Abstract:**

L'invention concerne un train de donnees comprenant un train de donnees hypervideo comportant des donnees hypervideo associees a un moment donne dans le temps dans une video. Dans un autre mode de realisation, le train de donnees hypervideo comprend egalement des donnees cible associees au moment donne dans le temps. Un procede de creation d'une suite multimedia comprend la creation d'une hypervideo, y compris d'une video. Les parametres hypervideo sont exportes dans un train de donnees hypervideo d'un fichier media. Dans un autre mode de realisation, un train de donnees de la video est exporte dans le fichier media. Dans un certain mode de realisation, un procede de creation d'une hypervideo dynamique consiste a creer une hypervideo et a definir un parametre hypervideo pouvant varier pendant l'execution de l'hypervideo. Dans un autre mode de realisation, un programme de traitement d'evenements est defini qui donne l'instruction de modifier le parametre apres reception d'un message d'evenement venant de l'hypervideo. Dans un certain mode de realisation, un procede d'execution d'une hypervideo dynamique consiste a executer une hypervideo et a modifier un parametre de l'hypervideo pendant l'execution de l'hypervideo. Dans un autre mode de realisation, le parametre est modifie apres realisation d'un evenement dans l'hypervideo. Dans un certain mode de realisation, un systeme hypervideo comporte un serveur hypervideo dynamique. Un lecteur est couple au serveur hypervideo dynamique. Un serveur media est couple au lecteur.

### **Claims:**

1. A data stream, comprising a hypervideo data stream including hypervideo data associated with an instance in time in a video.

2 The data stream of claim 1, wherein the hypervideo data stream further comprises target data associated with the instance in time.

3 The data stream of claim 1, wherein the hypervideo data stream further comprises geometry data of a hotspot associated with the instance in time.

4 The data stream of claim 3, wherein the hypervideo data stream further comprises shape data of a hotspot associated with the instance of time.

5 The data stream of claim 1, wherein the instance in time corresponds to a frame of the video.

6 A multimedia stream, comprising:

a hypervideo data stream including, a header, including static hypervideo data; 5 a body, coupled to the header, including dynamic hypervideo data; and wherein the dynamic hypervideo data includes time data that is associated with an instance of time in a video with which the dynamic hypervideo data and the static hypervideo data are associated.

7 The multimedia stream of claim 6, wherein the static hypervideo data comprises target data.

8 The multimedia stream of claim 6, wherein the dynamic hypervideo data further comprises geometry data of a hotspot.

9 The multimedia stream of claim 6, wherein the dynamic hypervideo data further comprises shape data of a hotspot.

10 The multimedia stream of claim 6, further comprising a video stream including a video frame, wherein the instance in time corresponds to the video frame.

11 The multimedia stream of claim 6, further comprising an audio stream.

12 A method of creating a multimedia stream, comprising:  
authoring a hypervideo, including a video; and exporting hypervideo parameters into a hypervideo data stream of a media I/O file.

13 The method of claim 12, further comprising exporting a data stream of the video into the media file.

14 A method for authoring a hypervideo that is dynamic, comprising:  
authoring a hypervideo; and 15 defining a hypervideo parameter that may vary during the hypervideo performance.

15 The method of claim 14, further comprising defining an event handler that issues a command to vary the parameter upon receiving an event message from the hypervideo. Copyright 1998 Veon, Ltd.

16 The method of claim 15, wherein the defining of the event handler comprises defining an event handler defined by a logical condition including a variable defined by a query to a database.

17 The method of claim 14, wherein authoring the hypervideo comprises defining a hotspot and linking the hotspot to a target.

18 The method of performing a hypervideo that is dynamic, comprising:  
performing a hypervideo; and varying a parameter of the hypervideo during the performance of the hypervideo. I/O

19. The method of claim 18, wherein the varying the parameter comprises varying the parameter upon the occurrence of an event in the hypervideo.

20 The method of claim 19, wherein the varying the parameter upon the occurrence of an event in the hypervideo comprises varying the parameter upon an event handler receiving a message associated with the event, and issuing a 15 command to vary the parameter.

21 The method of claim 20, wherein the varying the parameter upon an event handler receiving a message associated with the event, and issuing a command to vary the parameter comprises varying the parameter upon the event handler evaluating a logical condition including a variable defined by a query to a database.

22 The method of claim 18, wherein the varying the parameter comprises varying the parameter that identifies a target.

23 A hypervideo system, comprising:  
Copyright 1998 Veon, Ltd. a dynamic hypervideo server; a player coupled to the dynamic hypervideo server; and a media server coupled to the player.

24 The hypervideo system of claim 23, further comprising a database.

25 The hypervideo system of claim 23, further comprising an application program.

26 The hypervideo system of claim 23, wherein the application program is an electronic commerce server.

27 The hypervideo system of claim 23, wherein the application program is an I/O advertising server.

28 The hypervideo system of claim 23, wherein the application program is a training server.

29 The hypervideo system of claim 23, wherein the media server is a video server.

15 30. The hypervideo system of claim 23, further comprising a network coupling the player to the dynamic

hypervideo server and the media server. Copyright 1998 Veon, Ltd.

? S S5 AND S6 AND ((COMMERCE OR ECOMMERCE OR E(W)COMMERCE OR SHOP???? OR PURCHAS???? OR  
BUY???? OR BID???? OR AUCTION????)(10N)(link???? or hyperlink????))

Processing

Processing

Processing

Processing

Processing

Processing

Processing

Processing

Processing

Processing

Processing

Processing

Processing

65452976 S5

246692 S6

5789471 COMMERCE

173363 ECOMMERCE

20424161 E

5789471 COMMERCE

1756619 E(W)COMMERCE

8431187 SHOP????

12888034 PURCHAS????

15928126 BUY????

6091319 BID????

1558297 AUCTION????

9427570 LINK????

362036 HYPERLINK????

274344 (((((((COMMERCE OR ECOMMERCE) OR E(W)COMMERCE) OR SHOP????) OR  
PURCHAS????) OR BUY????) OR BID????) OR AUCTION????) (10N) (LINK???? OR HYPERLINK????)

S11 595 S S5 AND S6 AND ((COMMERCE OR ECOMMERCE OR E(W)COMMERCE OR SHOP???? OR  
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? S S5 AND S6 AND ((COMMERCE OR requisition???? or ECOMMERCE OR E(W)COMMERCE OR  
SHOP???? OR PURCHAS???? OR BUY???? OR BID???? OR AUCTION????) (5N) (hypertext???? or  
LINK???? OR HYPERLINK????))

Processing

Processing

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65452976 S5

246692 S6

5789471 COMMERCE

7 REQUISITION????

173363 ECOMMERCE

20424161 E

5789471 COMMERCE

1756619 E(W)COMMERCE

8431187 SHOP????

12888034 PURCHAS????

15928126 BUY????

6091319 BID????

1558297 AUCTION????

80753 HYPERTEXT????

9427570 LINK????

362036 HYPERLINK????

159109 (((((((COMMERCE OR REQUISITION????) OR ECOMMERCE) OR E(W)COMMERCE) OR SHOP????) OR PURCHAS????) OR BUY????) OR BID????) OR AUCTION????) (5N) ((HYPERTEXT???? OR LINK????) OR HYPERLINK????)

S12 385 S S5 AND S6 AND ((COMMERCE OR REQUISITION???? OR ECOMMERCE OR E(W)COMMERCE OR SHOP???? OR PURCHAS???? OR BUY???? OR BID???? OR AUCTION????) (5N) (HYPERTEXT???? OR LINK???? OR HYPERLINK????))

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Set	Items	Description
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S1	0	S AU=(HENDEL, C OR HENDEL C? OR CATHERINE(2N)HENDEL) OR BY=(CATHERINE(2N)HENDEL)
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S3	0	S AU=(LIN(W)HENDEL, C OR LIN(W)HENDEL C? OR CATHERINE(2N)LIN(W)HENDEL) OR BY=(CATHERINE(2N)LIN(W)HENDEL)
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S4	8	S S2 AND (VIRTUAL(W)(WORLD OR WORLDS OR REALITY OR REALITIES OR SHOWROOM OR SHOWROOMS OR GALLERY OR GALLERIES OR ENVIRONMET OR ENVIRONMENTS))
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S5	65452976	S PD<19990806
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S7	25922	S S5 AND S6 AND (COMMERCE OR ECOMMERCE OR E(W)COMMERCE OR SHOP???? OR PURCHAS???? OR BUY???? OR BID???? OR AUCTION????)
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S8	316	S S7 AND (HOTSPOT???? OR HOT(W)SPOT????)
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S10	9	RD (unique items)
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S11	595	S S5 AND S6 AND ((COMMERCE OR ECOMMERCE OR E(W)COMMERCE OR SHOP???? OR PURCHAS???? OR BUY???? OR BID???? OR AUCTION????) (10N) (LINK???? OR HYPERLINK????))
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S12	385	S S5 AND S6 AND ((COMMERCE OR REQUISITION???? OR ECOMMERCE OR E(W)COMMERCE OR SHOP???? OR PURCHAS???? OR BUY???? OR BID???? OR AUCTION????) (5N) (HYPERTEXT???? OR LINK???? OR HYPERLINK????))
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? S S5 AND S6 AND ((object or objects or image or images or photo or photos or picture or pictures or video or audio or photograph) (5N) (hotspot???? or hot(w)spot???? or HYPERTEXT???? OR hyper or LINK???? OR HYPERLINK????))

Processing

Processing

Processing

Processing

Processing



Processing

Processing

Processing

Processing

Processing

65452976 S5

246692 S6

2540414 OBJECT

1563371 OBJECTS

5300784 IMAGE

2726383 IMAGES

9293549 PHOTO

2087350 PHOTOS

5034405 PICTURE

2224767 PICTURES

7176658 VIDEO

2824648 AUDIO

854284 PHOTOGRAPH

142956 HOTSPOT????

4754807 HOT

5609417 SPOT????

218148 HOT(W) SPOT????

80753 HYPERTEXT????

152622 HYPER

9427570 LINK????

362036 HYPERLINK????

254734 (((((((((OBJECT OR OBJECTS) OR IMAGE) OR IMAGES) OR PHOTO) OR PHOTOS) OR PICTURE) OR PICTURES) OR VIDEO) OR AUDIO) OR PHOTOGRAPH) (5N) (((((HOTSPOT???? OR HOT(W)SPOT????) OR HYPERTEXT????) OR HYPER) OR LINK????) OR HYPERLINK????)

S13 1896 S S5 AND S6 AND ((OBJECT OR OBJECTS OR IMAGE OR IMAGES OR PHOTO OR PHOTOS OR PICTURE OR PICTURES OR VIDEO OR AUDIO OR PHOTOGRAPH) (5N) (HOTSPOT???? OR HOT(W)SPOT???? OR HYPERTEXT???? OR HYPER OR LINK???? OR HYPERLINK????))

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1896 S13

385 S12

S14            34    S S13 AND S12

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>>>W: Duplicate detection is not supported for File 347.

Duplicate detection is not supported for File 348.

Duplicate detection is not supported for File 349.

Records from unsupported files will be retained in the RD set.

S15            29    RD (UNIQUE ITEMS)

? t s15/free/all

>>>W: "FREE" is not a valid format name in file(s): 347-349

15/8/1 (Item 1 from file: 15)

ABI/Inform(R)

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02566575            232545871

**\*\*USE FORMAT 7 OR 9 FOR FULL TEXT\*\***

**How can technology help? Interviews with library directors**

**Word Count:** 3621 **Length:** 6 Pages

1998

**Geographic Names:** United States; US

**Descriptors:** Libraries; Trends; Technological planning; Colleges & universities

**Classification Codes:** 9190 (CN=United States); 2310 (CN=Planning); 8306 (CN=Schools & educational services)

**Print Media ID:** 45886

15/8/2 (Item 2 from file: 15)

ABI/Inform(R)

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01896579            05-47571

**\*\*USE FORMAT 7 OR 9 FOR FULL TEXT\*\***

**Total cost management in the Internet age**

**Word Count:** 4970 **Length:** 6 Pages

1998

**Descriptors:** Internet; Cost control; Construction industry; Technological change; Studies

**Classification Codes:** 5250 (CN=Telecommunications systems); 8370 (CN=Construction industry); 9130 (CN=Experimental/Theoretical)

15/8/3 (Item 3 from file: 15)

ABI/Inform(R)

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01770498 04-21489

**\*\*USE FORMAT 7 OR 9 FOR FULL TEXT\*\***

**The Internet as a marketing tool**

**Word Count:** 7624 **Length:** 11 Pages

Summer 1998

**Geographic Names:** US

**Descriptors:** Studies; Online advertising; Internet; Consumer behavior; Decision making; Impact analysis

**Classification Codes:** 9130 (CN=Experimental/Theoretical); 7200 (CN=Advertising); 7100 (CN=Market research); 5250 (CN=Telecommunications systems); 9190 (CN=United States)

15/8/4 (Item 4 from file: 15)

ABI/Inform(R)

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01671081 03-22071

**\*\*USE FORMAT 7 OR 9 FOR FULL TEXT\*\***

**Managing innovation in public services: European and international experience**

**Word Count:** 4457 **Length:** 10 Pages

May 1998

**Geographic Names:** Europe

**Descriptors:** Business process reengineering; Innovations; Public sector; Managerial skills; Studies

**Classification Codes:** 9175 (CN=Western Europe); 2200 (CN=Managerial skills); 5320 (CN=Quality control); 5400 (CN=Research & development); 9130 (CN=Experimental/Theoretical)

15/8/5 (Item 5 from file: 15)

ABI/Inform(R)

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01537224 01-88212

**\*\*USE FORMAT 7 OR 9 FOR FULL TEXT\*\***

**Flexible specialization and the reconfiguration of television production in the UK**

**Word Count:** 8802 **Length:** 16 Pages

Sep 1997

**Geographic Names:** UK

**Descriptors:** Studies; Television broadcasting; Strategic management; Organizational behavior; Technological change; Specialization

**Classification Codes:** 9175 (CN=Western Europe); 9130 (CN=Experimental/Theoretical); 2500 (CN=Organizational behavior); 2310 (CN=Planning); 5400 (CN=Research & development)

15/8/6 (Item 6 from file: 15)

ABI/Inform(R)

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01420910 00-71897

**\*\*USE FORMAT 7 OR 9 FOR FULL TEXT\*\***

**Webmasters say rules for linking sites helpful**

**Word Count:** 680 **Length:** 1 Pages

May 19, 1997

**Company Names:**

Ticketmaster Corp

Microsoft Corp ( Duns: 08-146-6849 Ticker: MSFT )

**Geographic Names:** US

**Descriptors:** Web sites; Connectivity; Litigation

**Classification Codes:** 9190 (CN=United States); 5250 (CN=Telecommunications systems); 4330 (CN=Litigation)

15/8/7 (Item 7 from file: 15)

ABI/Inform(R)

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01342725 99-92121

**\*\*USE FORMAT 7 OR 9 FOR FULL TEXT\*\***

**Face-to-face online**

**Word Count:** 2796 **Length:** 6 Pages

Jan 1997

**Geographic Names:** US

**Descriptors:** Virtual reality; Technological change; Standards; Internet

**Classification Codes:** 9190 (CN=United States); 5250 (CN=Telecommunications systems)

15/8/8 (Item 8 from file: 15)

ABI/Inform(R)

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00841165 94-90557

**\*\*USE FORMAT 7 OR 9 FOR FULL TEXT\*\***

**Virtual reality meets banking in the BT residential home of the future**

**Word Count:** 843 **Length:** 1 Pages

Mar 1994

**Company Names:**

BT PLC ( Duns: 22-701-5716 Ticker: BTY )

**Geographic Names:** England

**Descriptors:** Virtual reality; Banking industry; Telephone companies; Innovations; Technological change; Home entertainment industry

**Classification Codes:** 8100 (CN=Financial services industry); 9175 (CN=Western Europe); 8330 (CN=Broadcasting & telecommunications); 5400 (CN=Research & development)

15/8/9 (Item 1 from file: 810)

Business Wire

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0787251 BW0323

## **Business Wire Recap**

December 17, 1997

**Byline:** Editors  
**Word Count:** 3372

15/8/10 (Item 1 from file: 275)  
Gale Group Computer DB(TM)  
(c) 2009 Gale/Cengage. All rights reserved.  
02083972 **Supplier Number:** 17800155 (Use Format 7 Or 9 For FULL TEXT )  
**Welcome to the Web! 101 must-see sites.(Directory)**

March , 1996  
**Word Count:** 5453 **Line Count:** 00463

**Special Features:** other; illustration  
**Descriptors:** Internet/Web Site Directory; World Wide Web  
**SIC Codes:** 7375 Information retrieval services  
**File Segment:** CD File 275

15/8/11 (Item 2 from file: 275)  
Gale Group Computer DB(TM)  
(c) 2009 Gale/Cengage. All rights reserved.  
02021530 **Supplier Number:** 18891352 (Use Format 7 Or 9 For FULL TEXT )  
**Face-to-face online. (Internet interactivity) (includes related articles on virtual worlds, tools for building 3D Web spaces) (Internet Web Online Service Information)**

Jan , 1997  
**Word Count:** 3418 **Line Count:** 00265

**Special Features:** illustration; other  
**Descriptors:** Internet Web Technology Application; Internet Web Overview; VRML; **Virtual Reality** Technology  
**File Segment:** CD File 275

15/8/12 (Item 3 from file: 275)  
Gale Group Computer DB(TM)  
(c) 2009 Gale/Cengage. All rights reserved.  
01627587 **Supplier Number:** 14625673 (Use Format 7 Or 9 For FULL TEXT )  
**Bulletin Boards. (alphabetical listing of computer bulletin boards from Alabama through Michigan)**

Dec , 1993

**Word Count:** 45993 **Line Count:** 03552

**File Segment:** CD File 275

15/8/13 (Item 4 from file: 275)

Gale Group Computer DB(TM)

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01439758 **Supplier Number:** 10957512 (Use Format 7 Or 9 For FULL TEXT )

**MiniFinders. (buyer's guide to Apple Macintosh hardware and software) (buyers guide)**

August , 1991

**Word Count:** 80288 **Line Count:** 06476

**Descriptors:** Directories; Peripherals; Software packages

**SIC Codes:** 7372 Prepackaged software; 3572 Computer storage devices; 3577 Computer peripheral equipment, not elsewhere classified; 3575 Computer terminals

**Trade Names:** Apple Macintosh (680X0-based system)--Equipment and supplies

**File Segment:** CD File 275

15/8/14 (Item 1 from file: 813)

PR Newswire

(c) 1999 PR Newswire Association Inc. All rights reserved.

1443250 LNW001A

**End-of-Show Report on CeBIT '99 Hannover (18 to 24 March):**

**Date:** March 24, 1999

**Word Count:** 2,780

**Company Name:** DEUTSCHE MESSE AG

**Product:** INTERNET, MULTIMEDIA, ONLINE (MLM); COMPUTER, ELECTRONICS (CPR)

**State:** GERMANY

**Section Heading:** BUSINESS; TECHNOLOGY

15/8/15 (Item 2 from file: 813)

PR Newswire

(c) 1999 PR Newswire Association Inc. All rights reserved.

1242239 NYCPR

**PR Newswire High Technology Summary Thursday, March 12, 1998**

**Date:** March 12, 1998

**Word Count:** 1,988

**Section Heading:** TECHNOLOGY

15/8/16 (Item 1 from file: 16)

Gale Group PROMT(R)

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05738586 **Supplier Number:** 50218643 (USE FORMAT 7 FOR FULLTEXT)

**Good Web Hunting**

July 27 , 1998

**Word Count:** 3019

**Publisher Name:** Universal Media, Inc.

**Event Names:** \*240 (Marketing procedures )

**Geographic Names:** \*1USA (United States )

**Product Names:** \*7010100 (Tourist Travel); 9103400 (Travel & Tourism Policy)

**Industry Names:** BUSN (Any type of business); TRVL (Travel and Hospitality )

**NAICS Codes:** 92812 (International Affairs )

**Advertising Codes:** 25 New Electronic Marketing; 82 Geographic

15/8/17 (Item 2 from file: 16)

Gale Group PROMT(R)

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05058752 **Supplier Number:** 47425186 (USE FORMAT 7 FOR FULLTEXT)

**Avatars have to crawl before they walk**

June , 1997

**Word Count:** 5549

**Publisher Name:** Miller Freeman, Inc.

**Event Names:** \*350 (Product standards, safety, & recalls); 330 (Product information )

**Geographic Names:** \*1USA (United States )

**Product Names:** \*7372510 (Software Development Tools); 7372680 (Internet Software)

**Industry Names:** BUSN (Any type of business); CMPT (Computers and Office Automation )

**NAICS Codes:** 51121 (Software Publishers )

15/8/18 (Item 1 from file: 148)

Gale Group Trade & Industry DB

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10466359 **Supplier Number:** 21139129 (USE FORMAT 7 OR 9 FOR FULL TEXT )

**Secret Shopper -- Egghead.com/www.Egghead.com. (Company Business and Marketing)**

Sept 21 , 1998

**Word Count:** 1091 **Line Count:** 00082

**Company Names:** Egghead.com Inc.--Services

**Industry Codes/Names:** BUSN Any type of business; CMPT Computers and Office Automation; RETL Retailing

**Descriptors:** Computer stores--Services  
**Product/Industry Names:** 5734000 (Computer Stores)  
**Product/Industry Names:** 5734 Computer and software stores  
**Ticker Symbols:** EGGS  
**File Segment:** CD File 275

15/8/19 (Item 2 from file: 148)  
Gale Group Trade & Industry DB  
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09508086 **Supplier Number:** 19447186 (USE FORMAT 7 OR 9 FOR FULL TEXT )  
**Webmasters say rules for linking sites helpful. (Ticketmaster's lawsuit against Microsoft) (Company Business and Marketing)**

May 19 , 1997  
**Word Count:** 703 **Line Count:** 00057

**Special Features:** illustration; photograph  
**Company Names:** Ticketmaster Group Inc.--Cases; Microsoft Corp.--Cases  
**Industry Codes/Names:** CMPT Computers and Office Automation; BUSN Any type of business  
**Descriptors:** Transmission Control Protocol/Internet Protocol (Computer network protocol) --Standards; Computer software industry--Cases; Information services industry--Cases; Hypertext--Usage  
**Product/Industry Names:** 4811525 (Online Search Services & Directories)  
**Product/Industry Names:** 4822 Telegraph & other communications  
**Ticker Symbols:** TKTM; MSFT; TKTM; MSFT  
**File Segment:** CD File 275

15/8/20 (Item 3 from file: 148)  
Gale Group Trade & Industry DB  
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08583481 **Supplier Number:** 18124509 (USE FORMAT 7 OR 9 FOR FULL TEXT )  
**Integration builds factory of the future. (planning and management software is being linked with shop floor controls) (Industry Trend or Event)(Cover Story)**

March , 1996  
**Word Count:** 4085 **Line Count:** 00334

**Special Features:** illustration; photograph; graph  
**Industry Codes/Names:** ELEC Electronics  
**Descriptors:** Computer-integrated manufacturing--Computer programs  
**Product/Industry Names:** 7372 Prepackaged software  
**File Segment:** CD File 275

15/8/26 (Item 1 from file: 635)  
Business Dateline(R)



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0930718 98-92256

**Viable video**

**Publication Date: 980420**

**Word Count:** 1,345

**Dateline:** Tampa, FL, US, South Atlantic

**Company Names:** PowerCerv Corp, Tampa, FL, US, SIC:7372;7371,

**Classification Codes:** 5250 (Telecommunications systems)

**Descriptors:** Video teleconferencing

**Special Feature:** Photo

15/8/27 (Item 1 from file: 640)

San Francisco Chronicle

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07316137

## **COATES' 'BOX' AN INTERACTIVE JUNGLE**

FRIDAY, November 12, 1993

**Word Count:** 785

**Descriptors:** PERFORMANCE ART; ENTERTAINMENT; REVIEW; THEATER; SF; BOX CONSPIRACY -- AN INTERACTIVE SHO; GEORGE COATES; MARC REAM

15/8/28 (Item 1 from file: 735)

St. Petersburg Times

(c) 2009 St. Petersburg Times. All rights reserved.

09611007

## **VIABLE VIDEO**

MONDAY April 20, 1998

**Word Count:** 1,362

**Descriptors:** ALTERNATIVE; TECHNOLOGY

15/8/29 (Item 1 from file: 710)

Times/Sun.Times(London)

(c) 2009 Times Newspapers. All rights reserved.

08715950

**Welcome to the best connected town in Britain; Interface**

Wednesday, October 18, 1995

**Word Count:** 869

>>>W: "FREE" is not a valid format name in file(s): 347-349

15/8/26 (Item 1 from file: 635)

Business Dateline(R)

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0930718 98-92256

**Viable video**

**Publication Date:** 980420

**Word Count:** 1,345

**Dateline:** Tampa, FL, US, South Atlantic

**Company Names:** PowerCerv Corp, Tampa, FL, US, SIC:7372;7371,

**Classification Codes:** 5250 (Telecommunications systems)

**Descriptors:** Video teleconferencing

**Special Feature:** Photo

15/8/27 (Item 1 from file: 640)

San Francisco Chronicle

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07316137

## **COATES' 'BOX' AN INTERACTIVE JUNGLE**

FRIDAY, November 12, 1993

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**Descriptors:** PERFORMANCE ART; ENTERTAINMENT; REVIEW; THEATER; SF; BOX CONSPIRACY -- AN INTERACTIVE SHO; GEORGE COATES; MARC REAM

15/8/28 (Item 1 from file: 735)

St. Petersburg Times

(c) 2009 St. Petersburg Times. All rights reserved.

09611007

## **VIALE VIDEO**

MONDAY April 20, 1998

**Word Count:** 1,362

**Descriptors:** ALTERNATIVE; TECHNOLOGY

15/8/29 (Item 1 from file: 710)  
Times/Sun.Times(London)  
(c) 2009 Times Newspapers. All rights reserved.  
08715950

**Welcome to the best connected town in Britain; Interface**

Wednesday, October 18, 1995  
**Word Count:** 869

>>>W: "FREE" is not a valid format name in file(s): 347-349

15/8/29 (Item 1 from file: 710)  
Times/Sun.Times(London)  
(c) 2009 Times Newspapers. All rights reserved.  
08715950

**Welcome to the best connected town in Britain; Interface**

Wednesday, October 18, 1995  
**Word Count:** 869

? t s15/k/all

15/K/1 (Item 1 from file: 15)  
ABI/Inform(R)  
(c) 2009 ProQuest Info&Learning. All rights reserved.  
**Text:**

...for digital media. It has been designed to provide persistent and reliable identification of digital **objects** and an administration system to **link** customers with publishers, facilitate electronic **commerce**, and enable automated copyright management systems.] This whole series of developments is very much against...can be more creative: "I think we have an opportunity to use technology to create **virtual** reading **rooms** and **virtual** disciplinary **environments** for students and scholars to work in. That might release some of the pressure for...

15/K/2 (Item 2 from file: 15)

ABI/Inform(R)

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**Text:**

...So the architect clicks on "shop drawing status" on the project's webpage and is **linked**, transparently, to the **shop** drawing status page on the consulting engineers intranet. The consulting engineer is hosting his own...but is viewable and useable when received by the other subscribers.

TRENDS, PROGRESSIONS, AND OPPORTUNITIES

**Virtual Reality** Modeling Language (VRML)

The **virtual reality** modeling language (VRML) is a language for building 3-D models and worlds on the web. It's used for describing multi-user interactive simulations, 3-D **virtual worlds** networked via the global Internet and hyperlinked within the World Wide Web. VRML (pronounced Vermal...

...over low-bandwidth (28.8 modem) connections. A VRML document is a blueprint for a **virtual world**. VRML solves the problem of the high bandwidth required to do real-time 3-D be **links** to text, **audio**, or **video** files, HTML files or sites, or **links** to other VRML worlds. VRML **objects** can define their own behavior, like a swinging door working like a swinging door, and...This model could then be placed in the second object, the site plan. The building **object** had additional information **linked** within it, so it was possible to alter its appearance.

The first task was to...

15/K/3 (Item 3 from file: 15)

ABI/Inform(R)

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**Text:**

...pictures and sounds, to draw attention to a simple emotional message. For more involved consumers, **hyperlinks** to detailed product specifications, **pictures**, testimonials, and E-mail addresses of satisfied users can be provided through the company Web...try the products before they buy lowers the risk associated with product uncertainty (Hutheising, 1996). **Virtual reality** technology will eventually allow consumers to experience many types of products online. Obviously, the promotional...the consumer get a product well suited to his or her needs.

Marketers can use **hyperlinks** to **link shoppers** with

favorable publicity that might be available from independent Web sites.

As a marketing tool...

15/K/4 (Item 4 from file: 15)

ABI/Inform(R)

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**Text:**

...of policy initiatives, there are also various emerging technologies such as electronic data interchange, multimedia, **virtual reality** and interactive television to consider. How could they enable us to operate more effectively within...opportunities for different public sector and other organizations to cooperate and collaborate (e.g. Business **Links**, TECs and chambers of **commerce**). The Competitive Network (Bartram, 1996) contains a methodology for re-engineering supply chains using the...relation to options being created by information and communications technologies:

\* The emerging technologies of 'electronic **commerce**' create opportunities to establish **links** between hospitals and GPs that

could be used for such purposes as appointment booking or...

...mobile technologies range from equipping medical auxiliaries in geographically remote communities, with special helmets with **video** and **audio links** to an aircraft converted into a mobile operating theatre that flies around the world.

\* Relevant...

...enable practitioners to draw upon the consolidated expertise of their peers and the use of **virtual reality environments** to expose trainee practitioners to simulated situations that medical ethics would preclude if actual patients...

15/K/5 (Item 5 from file: 15)

ABI/Inform(R)

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**Text:**

...replace fixed schedule broadcasting, with TV consumers interactively selecting their own basket of programmes from **video-on-demand** servers **linked** to the emerging information super highway. As Nicholas Negroponte, head of the Media Lab at...up new avenues for entertainment provision, with possibilities for participant interaction

either over cable/satellite **links** (for example, to allow home **shopping** or narrowcasting via 'videoon-demand'), or via the viewer-controlled selection of material from laser...

...predicted by former Apple Computer Chairman John Scully that on-line interactive services like home **shopping** channels, videophone **links** and **virtual reality** interconnections will be worth US\$3500 billion by the year 2002. Even more staggeringly, the... Viking, 1995), p. 102. 20. B. Sherman & P. Judkins, Glimpses of Heaven, Visions of Hell: **Virtual Reality** and Its Implications (London,

Hodder Sr Stoughton, 1993).

21. N. Negroponte, Being Digital (London, Hodder...

15/K/6 (Item 6 from file: 15)

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**Text:**

...wanting a particular link to a site, mainly if a company finds a site that **links** to it offensive, Internet **commerce** executives said. They suggested that the Web needs standard rules for linking, but other observers...

...site at www.ticketmaster.com. Ticketmaster says it doesn't mind the fact that Microsoft **linked**, but the company **objects** to the manner in which the links were presented. The ticket purveyor claims Microsoft had ...

...Users were split on whether the lawsuit would be good for the Internet.

"In the **virtual world**, just like in the real world, you've got to have rules," said Eileen Kent...

15/K/7 (Item 7 from file: 15)

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**Abstract:**

The online world is slowly evolving toward **virtual reality** (VR). The most exotic of the new communications media combine interaction and exploration by providing...

...VR spaces. Several companies have developed 3-D chat technologies that

create virtual meeting places. **Virtual Reality** Modeling Language (VRML) is a standard command set for describing navigable spaces. There are 2...

**Text:**

...are being joined by places. We'll look at the evolution from textonly chats to **virtual reality** to the combination of the two--discussions between users in cyberspace. Plus there are a...

...the way we get our information. But if a group of cyberpioneers gets its way, **virtual reality** and navigable 3-D spaces will join those venerable media to become the newest players in the information revolution.

These pioneers are the guiding forces behind the **Virtual Reality** Modeling Language (VRML). Often pronounced to rhyme with thermal, VRML is a standard command set...a VRML world can contain links to other VRML worlds, to HTML pages, or to **audio** and **video** clips. It's this **object-linking** capability that can make a VRML site more than just a 3-D walk-through...OnLive spaces also make great use of graphics and background sound to create dangerously addictive **virtual worlds**. When working on this story, I used OnLive Traveler to conduct some virtual interviews with...

...to Web sites, but wandering within a space isn't as efficient as navigating conventional **hyperlinks**. Consider **shopping** in the real world: although there are times when you want to wander aimlessly through...

**Descriptors:**  
**Virtual reality;**

**Classification Codes:**

15/K/8 (Item 8 from file: 15)

ABI/Inform(R)

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**Virtual reality meets banking in the BT residential home of the future**

**Abstract:**

...the bank of the future. ICE encompasses a range of technologies, from simple faxes to **virtual reality**, for delivering personal

banking services to over 23 million UK homes. At the hub of...

**Text:**

...of Information Communications and Entertainment, and encompasses a range of technologies, from simple faxes to **virtual reality**, for delivering personal banking services to over 23 million UK homes. At the hub of...

...Virtual Interface to Service Applications) programme. This is a research project exploring the application of **virtual reality** in the home.

The TV-based Visa demo on display at Martlesham incorporates scanned images ...

...consulting a financial adviser (who could also be called up live on-screen through a **video link**), **buying** and selling shares, and viewing his portfolio in real-time on colourful and fluctuating 3...

**Descriptors:**

**Virtual reality;**

**Classification Codes:**

15/K/9 (Item 1 from file: 810)

Business Wire

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...PAUL, MINNESOTA--Re: Ritchie Bros.

Auctioneers - Three Cities Bid Against Each Other in First-Ever

**Video- Link Auction** (BW1422 19:39)

(SUMITOMO-BANK-OF-CA)(SUMI) SAN FRANCISCO--SUMIZ) Sumitomo Bank of California...BEVERLY HILLS, Calif.--World

Famous Rodeo Drive to Go On-Line!; Web Site to Offer **Virtual Reality**

Shopping Starting in March of 1998 (BW1102 09:00)

(MAPICS)(MAPX) ATLANTA--MAPICS Helps Drive...

15/K/10 (Item 1 from file: 275)



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...Covering all things related to hip director Quentin Tarantino, tarantino world features discussion areas, sounds, **pictures**, and **links** to other Tarantino-fan sites.

11. Anime Web Turnpike (<http://soyokaze.biosci.ohio-state.edu...>)

...Bitstream.

19. Multimedia Authoring Web  
(<http://www.mcli.dist.maricopa.edu/authoring>)

Your one-stop **shop** for **links** and information on multimedia-development resources for CD-ROMs, video, animation, online publishing, and more...D landscapes and objects, Apple Computer's QuickTime VR Web site opens the gateway to **virtual worlds**.

40. University of Texas Mac Archive  
(<http://wwwhost.ots.utexas.edu/mac/main.html>)

This...sites, newsgroups, and mailing lists covering a wide range of medical areas--from AIDS to **virtual reality** in medicine.

48. Health and Human Services (<http://www.os.dhhs.gov>)

The HHS site...

**19960300**

15/K/11 (Item 2 from file: 275)

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**Face-to-face online. (Internet interactivity) (includes related articles on virtual worlds, tools for building 3D Web spaces) (Internet Web Online Service Information)**

**Abstract:** Text-based chat has long been available on the Internet, and new virtual-reality technologies promise to let Macintosh users interact in multiuser 3D spaces. Internet Relay Chat (IRC... ..only interaction that does not demand a fast connection and works well on any Mac. Virtual Reality Modeling Language (VRML) is a standard command set for describing navigable 3D spaces. Clicking a...

**Abstract:**

...representations of others.

As for exploration, the online world is slowly but steadily moving toward **virtual reality**--not goggles-and-gloves VR, but on-screen scenes you can navigate by clicking and...

...being joined by places. We'll look at the evolution from text-only chats to **virtual reality** to the combination of the two--discussions between users in cyberspace. Plus there are a...

...the way we get our information. But if a group of cyberpioneers gets its

way, **virtual reality** and navigable 3-D spaces will join those venerable media to become the newest players in the information revolution.

These pioneers are the guiding forces behind the **Virtual Reality** Modeling Language (VRML). Often pronounced to rhyme with thermal, VRML is a standard command set...a VRML world can contain links to other VRML worlds, to HTML pages, or to **audio** and **video** clips. It's this **object-linking** capability that can make a VRML site more than just a 3-D walk-through...OnLive spaces also make great use of graphics and background sound to create dangerously addictive **virtual worlds**. When working on this story, I used OnLive Traveler to conduct some virtual interviews with...

...to Web sites, but wandering within a space isn't as efficient as navigating conventional **hyperlinks**. Consider **shopping** in the real world: although there are times when you want to wander aimlessly through...You can resize, reposition, and reshape objects as well as apply textures. Adding an URL **link** to an **object** involves selecting the object, choosing a command, and then typing the URL into a dialog...

## **Descriptors: ...Virtual Reality Technology**

### **Named Persons:**

**19970100**

15/K/12 (Item 3 from file: 275)  
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...with special support for OS/2 2.0, NetWare/networks, DESQview.  
Paso Robles 781-2257. **Virtual Reality** Labs BBS; sysop  
J.A. Ames. 1 line--386; 500Mb running WildCat 3.1 with...

...93; no fee. Multiplayer games, global chat, U/D file section, forums,  
Telecon-Link, Mutants-**link**.

Pasadena 797-0684. New **Image** BBS; sysop David ...91; no fee.  
Flea-market bulletin board. Buy, sell, trade items. Free access. Join our  
**buyers'** club.

Rockford 963-9717. Multi-**Link** PC BBS; sysop Rick Bergdahl. 2  
lines--286; 3100Mb running Falken BBS 6.6 with...specializing in Biblical  
exegesis and church-related programs, RBBS support.

Orange City 737-3960. The **Virtual Reality** BBS; sysop  
Travis Noteboom. 1 line--386; 80Mb running Renegade 04-16 Beta with Dallas  
...Echoes and RBBSnet: 8:936/208. Games, automated file imports, full

echoes.

Charlestown 287-0583. **Virtual Realities** BBS; sysop David  
Lewis. 1 line--386; 106Mb running Renegade 8-27 Beta with Boca...05/92; no  
fee. A "Star Trek" & sci-fi board. Trek stuff of all types.

**Virtual reality** games/demos. All interests.

South Haven 637-6965. Magnetic Mountain; sysop Mike Rieck. 1 line...

**19931200**

15/K/13 (Item 4 from file: 275)

Gale Group Computer DB(TM)

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...duplex unit and is very sensitive to line quality. Because the modem is the weak **link**, consider **buying** Timbuktú, Timbuktú/Remote, and the WakeUp cable separately and provide your own modem. Version 2...4 1/2

Virtus WalkThrough is a powerful modeling and visualization package that makes virtual **reality available** to ordinary desktop Macs. Provides two views of an imaginary building or other object: 2... color. Casts true shadows onto other objects and can project color graphics onto solids. objects **can** be linked **as** jointed and sliding mechanisms that can be manipulated without accidental dismantling. It can tween-animate...or (602) 998-9106. (Aug '89) \* '89 Eddy

DiagramMaker 4

DiagramMaker is a multipurpose object-**linking program**.

Forms a network of custom-designed objects with connecting points at the centers, corners, or...

...charts from text outlines. Lines join on contact and can be pulled into arcs. Objects **can** be linked **to** objects **in** other documents. No automatic right-angle line maintenance. Useful text-find feature. Version 1.1...

**19910800**

15/K/14 (Item 1 from file: 813)

PR Newswire

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**Correction:**

...the creation of a new global network in the world of business and communication, a **virtual world** which meets in the flesh once a year at CeBIT Hannover -- a summit meeting of...has become big business. The major software manufacturers and consulting services are now focusing

on **linking** the Internet **shopping** mall to such logistic processes as warehousing, invoicing and shipping.

State-of-the-art object...data efficiently, these solutions are linked to existing PDM systems (Product Data Management). OLE technology (**Object Linking** and Embedding) is used to link the data to the office world, thus making it...

15/K/15 (Item 2 from file: 813)

PR Newswire

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**Correction:**

...Into a License Agreement with MPM Corporation

NETH013 09:57 r f bc-MA-PictureTel-**video**

(ANDOVER) PictureTel Videoconferencing **Links** Parents With  
Their Hospitalized Premature Infants

NETH008 10:00 r f bc-MA-Allaire-ICVERIFY

(CAMBRIDGE) Allaire Acquires ICVERIFY Components for **E-Commerce; Linkage**

Provides Credit-Card Processing from Cold Fusion Development System

SFTH018 10:00 r f bc...New K6-3D Technology

CGTH026 11:50 r f bc-CA-ExoVision-internet

(LOS ANGELES) **Virtual Reality** Extends Communications  
Beyond Conventional  
Telephony ExoVision's VRCom Software Enables Communication Over  
Internet

NEW015 11...

15/K/16 (Item 1 from file: 16)

Gale Group PROMT(R)

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-

...Arizona Vacation Guide [www.arizonatourism.com], the official site of the Arizona Tourist Bureau, provides **links** to regional destination information, a **photo** tour, and information on conventions and group functions, statewide, as well as details on activities...and even the city's weather are also available. A vacation planner section has interior **links** to **shopping**, hotel and dining opportunities in the state.

North Carolina: With an online search engine, North...Chattanooga, Memphis and Nashville.

Texas: Agents can sign up for E-mail updates, order a **virtual reality** CD-ROM for client use or get updates on new events, functions and activities in...

...to navigate. Its home page incorporates topics included in each section, in addition to four **photos** that **link** users to a section for kids, weather, surveys and roads. Standard information is included in...

19980727

15/K/17 (Item 2 from file: 16)

Gale Group PROMT(R)

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-

**Virtual reality** on the Web could be very cool. It could be like William Gibson's Neuromancer...

...bring a new era of human-to-human and human-to-computer interaction. VRML, the **virtual reality** modeling language, could be the catalyst that makes it all happen. Then again, it could...

...was ratified the following October. (Riding the coattails of HTML, the acronym originally stood for **Virtual Reality** Markup Language. However, the name soon morphed into the more appropriate **Virtual Reality** Modeling Language.)

The ink was barely dry on the VRML 1.0 spec when architects...be swapped at run time as your viewpoint moves closer and farther away from an **object**. Nodes can specify **links** to other pages, other nodes, or other files. Nodes can even contain other nodes.

A...devoted to a product. Now, instead of quickly scanning and then clicking to the next **link**, potential **buyers** enter the ad, perhaps for minutes on end. A real-world analog is the Pepsi...

19970601

15/K/18 (Item 1 from file: 148)  
Gale Group Trade & Industry DB  
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...of a specialty shop. I was curious if they could re-create this in a **virtual environment**.

Little did I realize, my wonderful memories were about to be dragged through the mud...

...couple of seconds, I noticed the last item under the "graphics and design" heading was **photo** and **video** editing.

A click on this **link** showed me more **photo**-editing titles than I knew existed. Listed with each title was the vendor, SKU number...

...and found most did not include even basic product information. Only the price and a "**buy now**" **link** were listed.

I must say that without the frankness of the customer service rep I...

19980921

15/K/19 (Item 2 from file: 148)  
Gale Group Trade & Industry DB  
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...wanting a particular link to a site, mainly if a company finds a site that **links** to it offensive, Internet **commerce** executives said. They suggested that the Web needs standard rules for linking, but other observers...

...site at [www.ticketmaster.com](http://www.ticketmaster.com). Ticketmaster says it doesn't mind the fact that Microsoft **linked**, but the company **objects** to the manner in which the links were presented. The ticket purveyor claims Microsoft had ...

...Users were split on whether the lawsuit would be good for the Internet.

"In the **virtual world**, just like in the real world, you've got to have rules," said Eileen Kent...

19970519

15/K/20 (Item 3 from file: 148)

Gale Group Trade & Industry DB

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**Integration builds factory of the future. (planning and management software is being linked with shop floor controls) (Industry Trend or Event)(Cover Story)**

**Abstract:** ...printed circuit boards by 70%. One challenge facing software vendors tapping into the need to **link** planning and management software with **shop** floor controls is convincing customers to migrate away from proprietary software.

**Abstract:**

...Information Systems Co. (Orlando, FL). Zimmerman's group operates as a developer and integrator.

With **objects**, instead of **linking** jagged jigsaw pieces, connecting systems is as simple as rearranging smooth-sided building blocks. In...be observed in the output of the software when fully assembled. Other projects are targeting **virtual-reality** and other real-time system development.

Industry participants champion such government initiatives, but some observers...

19960300

15/K/21 (Item 1 from file: 348)

EUROPEAN PATENTS

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Country	Number	Kind	Date		
Type		Pub. Date		Kind	Text
Available Text		Language		Update	Word Count
Total Word Count (Document A)					
Total Word Count (Document B)					
Total Word Count (All Documents)					

**Specification:** ...to as "links". A link is a user-activated control reference that causes the data **object** at the **link** target node to be displayed. By following these links from panel to panel, the user...Web objects) or a long tour.

In "Browsing the WWW by interacting with a textual **virtual environment** -- A Framework for Experimenting with Navigational Metaphors" in ACM Hypertext '96, March 1996, pp. 170...experience during the navigation and surfing of Internet content.

Given a dynamic collection of Web **objects** with predefined **links**, the present invention has yet other features for navigating a pre-composed guided tour over...i.e., directed links such as (150)) are predefined into this collection and used to **link** Web **objects** within and between Web sites.

Figure 2 is a graphical depiction of a networked computing...tour experience of this user.

In a preferred embodiment, the user may click on any **link** found in any Web **object** embedded within a tour element (700). Clicking on the link will pause the current tour...The touring client will then open a new browser window for the presentation of this **link** and its associated Web **object**. In the event that the **link** represents a tour itself, the tour will be initiated on the new window. Pressing the...

#### Claims:

1. A computerized method for dynamically customizing a tour of a collection of dynamic **objects** across a plurality of **hyperlinked** network sites, the method comprising the steps of:

providing interactivity points including one or more...object, in response to said detecting.

19. A method of performing customization for on-line **commerce** in a **hypertext**-based system, comprising the steps of:

providing a tour;

collecting customer information associated with a...

15/K/22 (Item 2 from file: 348)

EUROPEAN PATENTS

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Country	Number	Kind	Date		
Type		Pub. Date		Kind	Text
Available Text		Language		Update	Word Count
Total Word Count (Document A)					
Total Word Count (Document B)					
Total Word Count (All Documents)					

**Specification:** ...described in a programming language Java (Sun Microsystems), and a WWW page described in VRML (**Virtual Reality** Modeling Language) for drawing a 3-D graphic on the WWW in real time, have...1710, which has been set as one for addresses associated with shopping, displays a text "**shopping**" 1711 with a **link** to a certain **shopping** page.

The section 1720, which has been set as one for e-mail addresses, displays...



**Specification:** ...been integrated. Image data formatted in GIF (Graphic Interchange Format) or according to JPEG (Joint **Photographic Experts** Group) can be pasted on a WWW page to be transmitted

Recently, a more dynamically... ..described in a programming language Java (Sun Microsystems), and a WWW page described in VRML (**Virtual Reality** Modeling Language) for drawing a 3-D graphic on the WWW in real time, have... ..anchor."

An anchor on a page displayed by the WWW browser is a symbol (an **image** or the like which indirectly expresses the address and contents of the link destination page) which... ..which is customised to the user's accesses is generated and displayed to the user **instead of** the initial Home Page.

A **visual** representation of search results in a database provided over the Internet is disclosed in WO... ..to a user's query. Based on the best hits from the database search, a "**virtual reality** scene" is generated. The **virtual reality** scene visualises a street having store fronts for the best search results by selecting and...terminal 151 is updated. When the user cannot find out the target page, the avatar **430** usually returns to the map **link** 420 in accordance with a user's instruction, when the current display screen changes to... ..700 shows addresses' types 710 and addresses 711. In Fig. 18, the addresses' types 710 **include** general groups named "WWW search", "**shopping**", etc. and more specific subgroups named "clothes", "books", etc.

Such group levels can be set...Moreover, according to whether an e-mail opening acknowledgement has been received or not, the **image** corresponding to **the** e-mail address can be changed to another, the color of the image can be...map 1700 illustrated in Fig. 36 is a text-based map in which HTML object **images** are **displayed** in the form of texts.

The map **1700** illustrated in Fig. 36 has four main sections 1710, 1720, 1730 and 1740, a road... ..1710, which has been set as one for addresses associated with shopping, displays a text "**shopping**" 1711 with a **link** to a certain **shopping** page.

The section 1720, which has been set as one for e-mail addresses, displays...

15/K/23 (Item 3 from file: 348)

EUROPEAN PATENTS

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Country	Number	Kind	Date		
Type	Pub. Date		Kind	Text	
Available Text	Language		Update	Word Count	
Total Word Count (Document A)					
Total Word Count (Document B)					
Total Word Count (All Documents)					

**Specification:** ...by a scanner, etc.]). The user image creation system creates a mappable (absolute or virtual) **link** of the user defined **images** for integration into other graphics and game software packages, such as where the user defined... ..images and/or sounds is incorporated into the audiovisual presentation and play of the resulting **video** game.

A user **image linker** system and methodology provide for user **image** to application software mapping and **linking** of user **image** and integration data (e.g., such as to games packages, graphics and other applications software, sound synthesizers, high level language development software, etc.), and further provides mapping and **linking** of user **image** and integration data to operating systems such as for standard personal computers (e.g., the...Resources Integrated Systems' Video Explorer, etc. In addition, the techniques and technologies being brought to "**virtual reality**" lend themselves to application of the user visual image in a video game invention and... ..adapter interface 110 or provided by a Game Card 120 or storage card 130) that **links image** data packets to game software functions and that can then be incorporated into the overall... ..etc) can be used.

Image integration can be provided via a universal software package for **linking** user visual **image** data to all games of the user created variety (e.g., for multiple cross-platform... ..numerous custom tailored software packages for each game or group of games to permit user **image** data packets to be **linked** and integrated into the **purchased** game software such as for vendor proprietary systems.

Game display functions can optionally include Sub... ..RAM], a floppy disk, optical, etc.) stores image data packet (i.e., .IDP) files, and **image** integration software **links** the .IDP files from the storage medium 130 for combinational mapping into the application software... ..be provided by dealer or factory support means as discussed above, or via a communications **link** such as a modem.

**Image** data packets can be converted from graphics initially created with any standard graphic, drawing or... ..to convert from standard graphics formats to the .IDP format and structure.

Game initialization and **linkage** to **image** data packets can be accomplished either (1) automatically during start-up or real-time during... ..or higher speed protocol). Data is loaded from a remote data source via the telecommunication **link** 151 to the **video** game apparatus 140 for storage in memory either in the video game apparatus 140 or...of the present invention, the user image creation system creates a mappable absolute or virtual **link** of the user defined **images** and sounds and related parameters for integration into other graphics and game software packages, such... ..user visual images and/or sounds is incorporated into the audiovisual presentation of the resulting **video** game. A virtually mappable **link** of the user defined **images** is game independent so that it can be mapped in a relocatable manner to fit... ..class of games is created with a uniform format and mapping, then an absolute mappable **link** of the user defined **image** can be utilized with games.

Most video games are designed with character-based video presentation... ..to effect the user visual image in video game.

As mentioned elsewhere herein, technology from **virtual reality** can be integrated into the present invention very well, in many ways. For example, there...car of the transportation car which transports the user through the exhibit.

Additionally, using a **virtual reality** system, the user can wear a helmet with a built in video capability or a... ..three dimensional situation instead of watching the video presentation on a two dimensional screen. The **virtual reality** system also allows the user to interact with other users (e.g., to battle his...volatile storage subsystem for storing an image data packet (IDP) file representative of a user **image**; a subsystem for **linking** the IDP file from the storage subsystem for combinational mapping into the application software for... ..logic for selecting one or more of the image data packets for integration into the **video** game; and **image** integration logic for **linking** the one or more selected **image** data packets into the application software wherein the image data packets and the application software... ..audiovisual presentation adapted from the predefined audiovisual presentation and the selected image data packets.

The **image** data packets can be **linked** to one or more game functions wherein the image data packets are incorporated into the...

**Claims:** ...presentation within respective ones of the images, and (ii) program data such as address maps, **image** signatures, absolute mappable **links** and virtual mappable links, the program data providing means for facilitating

selection of a portion... ..presentation within respective ones of the images, and (ii) program data such as address maps, **image** signatures, absolute mappable **links** and virtual mappable links, the program data providing means for facilitating selection of a portion... ..147) for selecting one or more of the image data packets for integration into the **video** game; and an **image** integration subsystem (140) for **linking** the one or more selected **image** data packets into the application software wherein the image data packets and the application software...

15/K/24 (Item 1 from file: 349)

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PCT FULLTEXT

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	Country	Number	Kind	Date
Patent				19

#### Detailed Description:

...by a scanner, etc.]). 'Me user image creation system creates a mappable (absolute or virtual) **link** of the user defined **images** for integration into other graphics and game software packages, such as where the user defined... ..images and/or sounds is incorporated into the audiovisual presentation and play of the resulting **video** game.

A user **image linker** system and methodology provide for user **image** to application software mapping and **linking** of user **image** and integration data (e.g., such as to games packages, graphics and other applications software, sound synthesizers, high level language development software, etc.), and further provides mapping and **linking** of user **image** and integration data to operating systems such as for standard personal computers (e.g., the...Resources Integrated Systems' Video Explorer, etc. In addition, the techniques and technologies being brought to "**virtual reality**" lend themselves to application of the user visual image in a video game invention and...adapter interface 110 or provided by a Game Card 120 or storage card 130) that **links image** data packets to game software functions and that can then be incorporated into the overall...etc) can be used.

Image integration can be provided via a universal software package for **linking** user visual **Image** data to all games of the user created variety (e.g., for multiple cross-platform... ..numerous custom tailored software packages for each game or group of games to permit user **image** data packets to be **linked** and integrated into the **purchased** game software such as for vendor proprietary systems.

Game display functions can optionally Include Sub... ..RAM], a floppy disk, optical, etc.) stores image data packet (i.e., IDP) files, and **image** integration software **links** the IDP files from the storage medium 130 for combinational mapping into the application software...be provided by dealer or factory support means as discussed above, or via a communications **link** such as a modem.

**Image** data packets can be converted from graphics Initially created with any standard 5 graphic, drawing...to convert from standard graphics formats to the JDP format and structure.

Game initialization and **linkage** to **Image** data packets can be accomplished either (1) automatically during start-up

or real-time during...speed protocol). Data is loaded from a remote 1 5 data source via the telecommunication **link** 151 to the **video** game apparatus 140 for storage in memory either in the video game apparatus 140 or...of the present invention, the user image creation system creates a mappable absolute or virtual **link** of the user defined **images** and sounds and related parameters for integration into other graphics and game software packages, such...user visual images and/or sounds is incorporated into the audiovisual presentation of the resulting **video** game. A virtually mappable **link** of the user defined **images** is game independent so that it can be mapped in a relocatable manner to fit... ..class of games is created with a uniform format and mapping, then an absolute mappable **link** of the user defined **image** can be utilized with games.

Most video games are designed with character-based video presentation...to effect the user visual Image in video game.

As mentioned elsewhere herein, technology from **virtual reality** can be integrated into the present invention very well, in many ways. For example, there...volatile storage subsystem for storing an image data packet (113P) file representative of a user **image**; a subsystem for **linking** the IDP file from the storage subsystem for combinational mapping into the application software for...

#### Claims:

...volatile storage means for storing an image data packet (IDP) file representative of a user **image**;means for **linking** the IDP file from the storage means for combinational mapping into theapplication software for...means for selecting one or more of the image data packets for integration into the**video** game; and**image** integration means for **linking** the one or more selected **image** data packets into the application software wherein the image data packets and the application software... ..and the selected image data packets.  
40 The system as in claim 39, wherein the **image** data packets are **linked** to one or more game functions wherein the image data packets are incorporated into the...

15/K/25 (Item 2 from file: 349)

Fulltext available through: [Order File History](#)

PCT FULLTEXT

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	Country	Number	Kind	Date
Patent				19

#### Detailed Description:

...geographically  
significant sight.

In one embodiment of the present invention, the multimedia

tour generator includes **links** to the **video** shots, **shopping** locations and postcards, in a similar fashion. In this manner the user can select shopping...typical geographic exploration using the invention disclosed above allows a visitor to navigate in a **virtual environment** of actual city such as London. The visitor is presented an image of London from...

#### **Claims:**

...claim 1,  
wherein the multimedia shopping generator provides access to one of the plurality of **shops** by a user activating a **hypertext** markup language icon associated with the one of the plurality of shops.  
5 A method...

15/K/26 (Item 1 from file: 635)

Business Dateline(R)

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**Publication Date: 980420**

#### **Text:**

...pay for top-of-the-line equipment to improve sight and sound, Reznick said.

Future **Link** in Dunedin, founded in 1996, **buys** cameras from Silicon Vision and resells them under a private label in its packages. President...on a server, and customers register to "attend" the demonstration to access the site.

Future **Link's video** conferencing

The Dunedin company sells a "See & Speak" package, including a camera and software, so...

...WHITE PHOTO; Caption: opening screen of PowerCerv's virtual meeting set-up; an example of **video** conferencing with Future **Link's** See & Speak package; a **virtual** conference **room** offered by the state of Florida; an example of **video** conferencing with Future **Link's** See & Speak package (ran p. 2)

15/K/27 (Item 1 from file: 640)  
San Francisco Chronicle  
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-

...that goes Judge Wapner one better by transforming couch potatoes into jurors. Isabel's interactive **links** with home **shopping** network saleswoman Beth (Diana Brown, in a suavely unctuous performance) have a prefabricated intimacy...

...experience we share with the Hornsbys.

Coates conjures up an ominously funny ``digital Darwinism'' where **virtual reality** has a way of blurring into violent reality. ``It's just a point and click thing,'' someone says, **linking** remote control **video** wands and handguns. With 5,000 channels, the remote controls are loaded and the triggers...

931112

15/K/28 (Item 1 from file: 735)  
St. Petersburg Times  
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-

...pay for top-of-the-line equipment to improve sight and sound, Reznick said.

Future **Link** in Dunedin, founded in 1996, **buys** cameras from Silicon Vision and resells them under a private label in its packages. President...

...on a server, and customers register to "attend" the demonstration to access the site.

Future **Link's video** conferencing

The Dunedin company sells a "See & Speak" package, including a camera and software, so...

**Caption:**

...AND WHITE PHOTO

opening screen of PowerCerv's virtual meeting set-up; an example of **video** conferencing with Future **Link's** See & Speak package; a **virtual** conference **room** offered by the state of Florida; an example of **video** conferencing with Future **Link's** See & Speak package (ran p. 2)

**980420**

15/K/29 (Item 1 from file: 710)

Times/Sun.Times(London)

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**Text:**

...and others by the cable companies, are taking shape, offering everything from home banking to **video links** between schools in remote areas like the Highlands. But the Salford project, which has gathered...

...of Salford, one of the partners in the scheme and a centre of excellence in **virtual reality** and robotics, says: "We want to have a real effect on peoples' lives, improve the...

...Environment allows small businesses to monitor security of their premises from home.

Community: Salford Job **Shops** Project **links** employment offices and employers to identify vacancies not normally publicised; public consultations carried out by...

**951018**

? ts15/7/25,22,17,3,2

15/7/25 (Item 2 from file: 349)

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PCT FULLTEXT

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00400769

**GEOGRAPHICAL EXPLORATION SYSTEM AND METHOD**  
**SYSTEME D'EXPLORATION GEOGRAPHIQUE ET PROCEDE CORRESPONDANT**

**Patent Applicant/Patent Assignee:**

- **MOTOROLA INC**
- **STUCKMAN Bruce E**
- **REBER William L**
- **HALLING Dale B**
- **LEEKE Steven D**

**Inventor(s):**

- **STUCKMAN Bruce E**
- **REBER William L**
- **HALLING Dale B**
- **LEEKE Steven D**

	<b>Country</b>	<b>Number</b>	<b>Kind</b>	<b>Date</b>
Patent	WO	9741513	A1	<b>19971106</b>
Application	WO	97US6080		19970411
Priorities	US	96640637		19960501

**Designated States:** (Protection type is "Patent" unless otherwise stated - for applications prior to 2004)

AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY,  
CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI,  
GB, GE, GH, HU, IL, IS, JP, KE, KG, KP,  
KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD,  
MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO,  
RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT,  
UA, UG, US, VN, YU, GH, KE, LS, MW, SD,  
SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR,  
GB, GR, IE, IT, LU, MC, NL, PT, SE, BF,  
BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE,



SN, TD, TG

**Main International Patent Classes (Version 7):**

<b>IPC</b>	<b>Level</b>
G06F-013/00	Main
Publication Language:	English
Filing Language:	
Fulltext word count:	4165

**English Abstract:**

A geographical exploration system has a location server (16) associated with a geographical location. The location server (16) has a communication port (17) for receiving and transmitting a plurality of signals. The location server (16) transmits a signal containing a home page (40) upon receiving an initial query containing a uniform resource locator associated with the location server (16). A postcard generator (60) is coupled to the location server (16). The postcard generator (60) has a number of post cards relevant to the geographical location. The postcard generator (6) transmits a signal containing information on the postcards (76) upon receiving an initial query containing the postcard generators address.

**French Abstract:**

Cette invention concerne un systeme d'exploration geographique comportant un serveur de localisation (16) associe a une localisation geographique. Ledit serveur de localisation (16) possede une porte de communication (17) permettant de recevoir et d'emettre une pluralite de signaux. Ledit serveur de localisation (16) emet un signal contenant une page d'accueil (40) lorsqu'il recoit une premiere interrogation contenant un organe de localisation de ressource uniforme associe au serveur de localisation (16). Un generateur de cartes postales (60), qui est couple au serveur de localisation (16), comporte un certain nombre de cartes postales ayant un rapport avec la localisation geographique. Ledit generateur de cartes postales (6) emet un signal contenant des informations relatives aux cartes postales (76) lorsqu'il recoit une premiere interrogation contenant l'adresse des generateurs de cartes postales.

**Claims:**

Claims

I A geographical exploration system comprising;a user interface having a plurality of user inputsassociated with a plurality of signals;a communication system coupled to the user interface forcarrying the plurality of signals;a destination server corresponding to a geographicallocation, coupled to the communication system and receiving atleast one of the plurality of signals;a multimedia shopping generator having a Plurality ofshops corresponding to the geographical location, coupled to thedestination server and the multimedia shopping generatorbeing connected to the user interface upon one of the Pluralityof signals associated with the multimedia shopping generatorbeing received by the destination server;a postcard generator having a plurality of post cardscorresponding to the geographical location, coupled to thedestination server and the postcard generator being connectedto the user interface upon the destination server receiving oneof the plurality of signals associated with the post cardgenerator;a multimedia tour generator having a plurality of toursrelated to the geographical location, coupled to the destinationserver and the multimedia tour generator being connected tothe user interface upon the destination server receiving one ofthe plurality of signals associated with the multimedia tourgenerator; and a plurality of video data of the geographic location,coupled to the destination server and the plurality of videodata being connected to the user interface upon the destinationserver receiving one of the plurality of signals associated withthe plurality of video data.

2 The geographical exploration system of claim 1, wherein a user accesses the destination server by transmittinga signal including a universal resource locator associated withthe destination server.

3 The geographical exploration system of claim 1, wherein the multimedia shopping generator is connected to the user interface upon a user activating a hypertext markup language icon on a home page of the destination server that transmits a signal containing a universal resource locator associated with the multimedia shopping generator.

4 The geographical exploration system of claim 1, wherein the multimedia shopping generator provides access to one of the plurality of **shops** by a user activating a hypertext markup language icon associated with the one of the plurality of shops.

5 A method of geographical exploration comprising the steps of: (a) transmitting a uniform resource locator associated with a location server; (b) receiving and displaying a home page associated with the location server; (c) selecting one of a plurality of exploration options corresponding to a geographical location; (d) when a post card generator is selected, receiving an image of a plurality of selectable post cards; (i) selecting one of the plurality of post cards; (ii) addressing the one of the plurality of post cards; and (iii) preparing the one of the plurality of post cards for delivery.

6 The method of claim 5, wherein the step of addressing the one of the plurality of post cards further includes the step of entering a handwritten note on the one of the plurality of post cards.

7 The method of claim 5, further including the steps of: (e) when a live video camera is selected, receiving a video data stream from a video camera at the geographical location.

8 A geographical exploration system, comprising: a communications port for receiving and transmitting a plurality of signals; a controller coupled to the communications port, responding to and generating the plurality of signals; a printer coupled to the controller, having a plurality of input trays, the printer selecting a post card from one of the plurality of input trays based upon one of the plurality of signals received by the controller; a postage machine coupled to the controller, receiving the post card from the printer, the postage machine calculating a correct postage based on one of the plurality of signals received by the controller containing an address and placing the correct postage on the post card.

9 A geographical exploration system comprising: a location server associated with a geographical location, having a communication port for receiving and transmitting a plurality of signals, the location server transmitting a signal containing a home page upon receiving an initial query containing a uniform resource locator associated with the location server; a postcard generator having a plurality of postcards relevant to the geographical location, the postcard generator being coupled to the location server and transmitting a signal containing information on the plurality of postcards upon receiving an initial query containing a postcard generator address.

10 The geographical exploration unit of claim 9, wherein the postcard generator comprises: an input/output port for receiving and transmitting a plurality of signals; a controller coupled to the input/output port, responding to and generating the plurality of signals; a printer coupled to the controller, having a plurality of input trays the printer selecting a postcard from one of the plurality of input trays based upon one of the plurality of signals received by the controller; a postage machine coupled to the controller, receiving the postcard from the printer, the postage machine calculating a correct postage based on one of the plurality of signals received by the controller containing an address and placing the correct postage on the postcard.

15/7/22 (Item 2 from file: 348)

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01046939

**Network-access management system and method**

System und Verfahren zur Netzzugriffsverwaltung

Systeme et procede pour la gestion de l'acces a un reseau

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WO 97/15889 A; WO 97/41673 A; **Abstract** EP 926591 A3

In a network-access management system (110), addresses of pages which at least one client terminal (151, 152) has accessed in the past are stored in a history table in association with user ID information. When a connection request from the client terminal (151, 152) is detected, display data is created based on the access frequency and type of the addresses stored in the history table and the performance of the client terminal (151, 152), anchors for the addresses (or object images having an anchoring function) are pasted into the display data, and the display data thus created is sent to the client terminal (151, 152). The client terminal (150) displays the display data. When a user select the anchors, the client terminal (150) is connected to the information associated to the anchor through the network-access management system (100) and the network (160).

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#### Claims:

1. A network-access management system (100), which connects at least one client terminal (151, 152) and a network having information resources (130, 140, 170, 180), and which performs information transmissions between said at least one client terminal and said network, characterized by comprising:

first storage means (122) for storing addresses of information pieces which said at least one client terminal has accessed in the past;

analyzing means (112A) for analyzing attributes of the addresses stored in said first storage means;

creating means (112B) for creating display data which reflects a result of the analysis performed by said analyzing means; and

sending means (112C) for sending the display data created by said creating means to said at least one client terminal.

2. The network-access management system according to claim 1, characterized in that the attributes of the addresses includes at least one of types of the addresses, types of information to which the addresses are assigned, and frequency of accesses to the addresses.

3. The network-access management system according to claim 1, characterized in that said display data is map data representing a map in which anchors for the addresses stored in said first storage means are laid out.

4. The network-access management system according to claim 1, further comprising:

second storage means (125) for storing display data sent in the past to said at least one client terminal; and  
means (112B) for changing the display data stored in said second storage means to the display data created by said creating means.

5. The network-access management system according to claim 1, further comprising:

second storage means (125) for storing display data sent in the past to said at least one client terminal;  
checking means (112) for checking the display data stored in said second storage means with the display data created by said creating means, thereby determining a change in the display data stored in said second storage means; and  
means (112B) for reflecting the change determined by said checking means in the display data created by said creating means.

6. The network-access management system according to claim 1, further comprising:

third storage means (124) for storing, in association with said addresses, images which serve as anchors for said addresses; and  
means (112) for reading out the images stored in said third storage means, based on the addresses stored in said first storage means, and for pasting the readout images into the display data created by said creating means.

7. The network-access management system according to claim 6, characterized in that said third storage means stores, in association with each other, types of said addresses and three-dimensional images which are characterizations of the information pieces stored in said addresses.

8. The network-access management system according to claim 1, further comprising:

accessing means (112D) for periodically accessing the addresses stored in said first storage means;  
first determining means (112D) for determining statuses of the information pieces stored in locations specified by the addresses which said accessing means has accessed; and  
first altering means (112B) for altering said display data in accordance with a result of the determination performed by said first determining means.

9. The network-access management system according to claim 8, further comprising:

fourth storage means (124) for storing, in association with each other, said statuses and three-dimensional images which are characterizations of contents of said statuses; and  
means (112) for reading out the images stored in said fourth storage means, based on the statuses determined by said first determining means, and for pasting the readout images into said display data.

10. The network-access management system according to claim 1, further comprising:

accessing means (112D) for periodically accessing the addresses stored in said first storage means;  
second determining means (112D) for determining statuses of said network when permits said accessing means to access said addresses; and  
second altering means (112B) for altering said display data in accordance with a result of the determination performed by said second determining means.

11. The network-access management system according to claim 10, further comprising:

fifth storage means (124) for storing, in association with each other, said statuses and three-dimensional images which are characterizations of contents of said statuses; and

means (112) for reading out the images stored in said fifth storage means, based on the statuses determined by said first determining means, and for pasting the readout images onto said display data.

12. The network-access management system according to claim 1, further comprising:

sixth storage means (2121) for storing information on at least a display performance of said at least one client terminal; and

third altering means (121B) for altering said display data, based on at least the display performance stored in said sixth storage means, when said display data is sent to said at least one client terminal.

13. The network-access management system according to claim 1, characterized in that said network is WWW, and said display data is structured document data described in VRML.

14. A network-access management method for dealing with information transmissions between at least one client terminal (151, 152) and a network having information resources (130, 140, 170, 180), characterized by comprising:

a storing step of storing addresses of information pieces which said at least one client terminal has accessed in the past;

an analyzing step of analyzing attributes of the stored addresses;

a creating step of creating display data to be displayed on said at least one client terminal, in accordance with a result of the analysis; and

a sending step of sending the created display data to said at least one client terminal.

15. The network-access management method according to claim 14, characterized in that the display data created in said creating step is map data representing a map in which anchors for said addresses are laid out.

16. The network-access management method according to claim 14, further comprising:

a display data storing step of storing display data sent in the past to said at least one client terminal; and

a changing step of changing the display data sent in the past to the created display data.

17. The network-access management method according to claim 14, further comprising:

a display data storing step of storing display data sent in the past to said at least one client terminal;

a checking step of checking the display data sent in the past with the created display data, thereby determining a change in the display data sent in the past; and

a reflecting step of reflecting the change determined by said checking step in the created display data.

18. The network-access management system according to claim 14, further comprising:

an image storing step of storing, in association with said addresses, images which serve as anchors for said addresses; and

a pasting step of reading out the images stored in said image storing step, based on the stored addresses, and pasting the readout images into the created display data.

19. The network-access management method according to claim 14, further comprising:

an accessing step of periodically accessing the stored addresses;

a determining step of determining statuses of the information pieces stored in locations specified by the accessed addresses; and

an altering step of altering the display data to be sent to said at least one client terminal, in accordance with a result of the determination performed by said determining step.

20. The network-access management method according to claim 14, further comprising:

an accessing step of periodically accessing the stored addresses;

a determining step of determining statuses of said network which permits accesses to said addresses to be gained; and

an altering step of altering the display data to be sent to said at least one client terminal, in accordance with a result of the determination performed by said determining step.

21. A computer program product which is applied to a network-access management method for information transmissions between at least one client terminal and a network having resources of information pieces to which addresses have been assigned, said computer program product including a computer readable program recorded on a computer usable medium, for creating display data to be sent to said at least one client terminal, said computer readable program executing:

a storing step of storing the addresses of the information pieces which said at least one client terminal has accessed in the past;

an analyzing step of analyzing attributes of the stored addresses;

a creating step of creating the display data to be displayed on said at least one client terminal, in accordance with a result of the analysis; and

a sending step of sending the created display data to said at least one client terminal.

**Claims:** EP 926591 B1

1. A network-access management system (100), which connects at least one client terminal (151, 152) and a network having information resources (130, 140, 170, 180), and which performs information transmissions between said at least one client terminal and said network, comprising:

first storage means (122) for storing addresses of information pieces which said at least one client terminal has accessed in the past;

analyzing means (112A) for analyzing attributes of the addresses stored in said first storage means, said attributes of the addresses include the frequency of accesses to said stored addresses,

creating means (112B) for creating display data which reflects a result of the analysis performed by said analyzing means; and

sending means (112C) for sending the display data created by said creating means to said at least one client terminal characterized in that

said creating means (112B) creates said display data by arranging the addresses depending on the frequency of accesses to said addresses.

2. The network-access management system according to claim 1, characterized in that the attributes of the addresses includes at least one of types of the addresses and types of information to which the addresses are assigned.

3. The network-access management system according to claim 1, characterized in that said display data is map data representing a map in which anchors for the addresses stored in said first storage means are laid out.

4. The network-access management system according to claim 1, further comprising:

second storage means (125) for storing display data sent in the past to said at least one client terminal; and

means (112B) for changing the display data stored in said second storage means to the display data created by said creating means.

5. The network-access management system according to claim 1, further comprising:

second storage means (125) for storing display data sent in the past to said at least one client terminal;

checking means (112) for checking the display data stored in said second storage means with the display data created by said creating means, thereby determining a change in the display data stored in said second storage means; and

means (112B) for reflecting the change determined by said checking means in the display data created by said creating means.

6. The network-access management system according to claim 1, further comprising:

third storage means (124) for storing, in association with said addresses, images which serve as anchors for said addresses; and

means (112) for reading out the images stored in said third storage means, based on the addresses stored in said first storage means, and for pasting the readout images into the display data created by said creating means.

7. The network-access management system according to claim 6, characterized in that said third storage means stores, in association with each other, types of said addresses and three-dimensional images which are characterizations of the information pieces stored in said addresses.

8. The network-access management system according to claim 1, further comprising:

accessing means (112D) for periodically accessing the addresses stored in said first storage means;

first determining means (112D) for determining statuses of the information pieces stored in locations specified by the addresses which said accessing means has accessed; and

first altering means (112B) for altering said display data in accordance with a result of the determination performed by said first determining means.

9. The network-access management system according to claim 8, further comprising:

fourth storage means (124) for storing, in association with each other, said statuses and three-dimensional images which are characterizations of contents of said statuses; and

means (112) for reading out the images stored in said fourth storage means, based on the statuses determined by said first determining means, and for pasting the readout images into said display data.

10. The network-access management system according to claim 1, further comprising:

accessing means (112D) for periodically accessing the addresses stored in said first storage means;

second determining means (112D) for determining statuses of said network when permits said accessing means to access said addresses; and

second altering means (112B) for altering said display data in accordance with a result of the determination performed by said second determining means.



11. The network-access management system according to claim 10, further comprising:

fifth storage means (124) for storing, in association with each other, said statuses and three-dimensional images which are characterizations of contents of said statuses; and

means (112) for reading out the images stored in said fifth storage means, based on the statuses determined by said first determining means, and for pasting the readout images onto said display data.

12. The network-access management system according to claim 1, further comprising:

sixth storage means (2121) for storing information on at least a display performance of said at least one client terminal; and

third altering means (121B) for altering said display data, based on at least the display performance stored in said sixth storage means, when said display data is sent to said at least one client terminal.

13. The network-access management system according to claim 1, characterized in that said network is WWW, and said display data is structured document data described in VRML.

14. A network-access management method for dealing with information transmissions between at least one client terminal (151, 152) and a network having information resources (130, 140, 170, 180), comprising:

a storing step of storing addresses of information pieces which said at least one client terminal has accessed in the past;

an analyzing step of analyzing attributes of the stored addresses, said attributes of the addresses include the frequency of accesses to said stored addresses;

a creating step of creating display data to be displayed on said at least one client terminal, in accordance with a result of the analysis;

a sending step of sending the created display data to said at least one client terminal, characterized in that

said creating step creates said display data by arranging the addresses depending on the frequency of accesses to said addresses.

15. The network-access management method according to claim 14, characterized in that the display data created in said creating step is map data representing a map in which anchors for said addresses are laid out.

16. The network-access management method according to claim 14, further comprising:

a display data storing step of storing display data sent in the past to said at least one client terminal; and

a changing step of changing the display data sent in the past to the created display data.

17. The network-access management method according to claim 14, further comprising:

a display data storing step of storing display data sent in the past to said at least one client terminal;

a checking step of checking the display data sent in the past with the created display data, thereby determining a change in the display data sent in the past; and

a reflecting step of reflecting the change determined by said checking step in the created display data.

18. The network-access management method according to claim 14, further comprising:

an image storing step of storing, in association with said addresses, images which serve as anchors for said addresses; and

a pasting step of reading out the images stored in said image storing step, based on the stored addresses, and pasting the readout images into the created display data.

19. The network-access management method according to claim 14, further comprising:

an accessing step of periodically accessing the stored addresses;

a determining step of determining statuses of the information pieces stored in locations specified by the accessed addresses; and

an altering step of altering the display data to be sent to said at least one client terminal, in accordance with a result of the determination performed by said determining step.

20. The network-access management method according to claim 14, further comprising:

an accessing step of periodically accessing the stored addresses;

a determining step of determining statuses of said network which permits accesses to said addresses to be gained; and

an altering step of altering the display data to be sent to said at least one client terminal, in accordance with a result of the determination performed by said determining step.

21. A computer program product storing a program code for executing all steps of the network-access management method of claim 14.

**Claims:** EP 926591 B1

1. Netzwerkszugriffs-Verwaltungssystem (100), das wenigstens ein Client-Endgerät (151, 152) und ein Netzwerk mit Informations-Ressourcen (130, 140, 170, 180) verbindet und das Informationsübertragungen zwischen dem wenigstens einen Client-Endgerät und dem Netzwerk durchführt, und das umfasst:

eine erste Speichereinrichtung (122), die Adressen von Informationselementen speichert, auf die das wenigstens eine Client-Endgerät in der Vergangenheit zugegriffen hat;

eine Analyseinrichtung (112A), die Attribute der in der ersten Speichereinrichtung gespeicherten Adressen analysiert, wobei die Attribute der Adressen die Häufigkeit von Zugriffen auf die gespeicherten Adressen einschließen,

eine Erzeugungseinrichtung (112B), die Anzeigedaten erzeugt, die ein Ergebnis der durch die Analyseinrichtung durchgeführten Analyse wiedergeben; und

eine Sendeeinrichtung (112C), die die durch die Erzeugungseinrichtung erzeugten Anzeigedaten zu dem wenigstens einen Client-Endgerät sendet, dadurch gekennzeichnet, dass:

die Erzeugungseinrichtung (112B) die Anzeigedaten erzeugt, indem sie die Adressen in Abhängigkeit von der Häufigkeit von Zugriffen auf die Adressen ordnet.

2. Netzwerkszugriffs-Verwaltungssystem nach Anspruch 1, dadurch gekennzeichnet, dass die Attribute der Adressen wenigstens einen von Typen der Adressen und Typen von Informationen einschließen, denen die Adressen zugeordnet sind.

3. Netzwerkzugriffs-Verwaltungssystem nach Anspruch 1, dadurch gekennzeichnet, dass die Anzeigedaten Karten-Daten sind, die eine Karte darstellen, in der Anker für die Adressen, die in der ersten Speichereinrichtung gespeichert sind, angeordnet sind.

4. Netzwerkzugriffs-Verwaltungssystem nach Anspruch 1, das des Weiteren umfasst:

eine zweite Speichereinrichtung (125), die Anzeigedaten speichert, die in der Vergangenheit zu dem wenigstens einen Client-Endgerät gesendet worden sind; und

eine Einrichtung (112B), die die in der zweiten Speichereinrichtung gespeicherten Anzeigedaten zu den durch die Erzeugungseinrichtung erzeugten Anzeigedaten ändert.

5. Netzwerkzugriffs-Verwaltungssystem nach Anspruch 1, das des Weiteren umfasst:

eine zweite Speichereinrichtung (125), die Anzeigedaten speichert, die in der Vergangenheit zu dem wenigstens einen Client-Endgerät gesendet worden sind;

eine Vergleichseinrichtung (112), die die in der zweiten Speichereinrichtung gespeicherten Anzeigedaten mit den durch die Erzeugungseinrichtung erzeugten Anzeigedaten vergleicht und so eine Änderung an den in der zweiten Speichereinrichtung gespeicherten Anzeigedaten feststellt; und

eine Einrichtung (112B), die die durch die Prüfeinrichtung festgestellte Änderung an den durch die Erzeugungseinrichtung erzeugten Anzeigedaten wiedergibt.

6. Netzwerkzugriffs-Verwaltungssystem nach Anspruch 1, das des Weiteren umfasst:

eine dritte Speichereinrichtung (124), die verknüpft mit den Adressen Bilder speichert, die als Anker für die Adressen dienen; und

eine Einrichtung (112), die die in der dritten Speichereinrichtung gespeicherten Bilder auf Basis der in der ersten Speichereinrichtung gespeicherten Adressen ausliest und die ausgelesenen Bilder in die durch die Erzeugungseinrichtung erzeugten Anzeigedaten einfügt.

7. Netzwerkzugriffs-Verwaltungssystem nach Anspruch 6, dadurch gekennzeichnet, dass die dritte Speichereinrichtung miteinander verknüpft Typen von Adressen und dreidimensionale Bilder speichert, die Kennzeichnungen der von den Adressen gespeicherten Informationselemente sind.

8. Netzwerkzugriffs-Verwaltungssystem nach Anspruch 1, das des Weiteren umfasst:

eine Zugriffseinrichtung (112D), die periodisch auf die in der ersten Speichereinrichtung gespeicherten Adressen zugreift;

eine erste Feststelleinrichtung (112D), die Zustände der Informationselemente feststellt, die an Orten gespeichert sind, die durch die Adressen angegeben werden, auf die die Zugriffseinrichtung zugegriffen hat; und

eine erste Änderungseinrichtung (112B), die die Anzeigedaten entsprechend einem Ergebnis der durch die erste Feststelleinrichtung durchgeführten Feststellung ändert.

9. Netzwerkzugriffs-Verwaltungssystem nach Anspruch 8, das des Weiteren umfasst:

eine vierte Speichereinrichtung (124), die miteinander verknüpft die Zustände und dreidimensionalen Bilder speichert, die Kennzeichnungen des Inhalts der Zustände sind; und

eine Einrichtung (112), die die in der vierten Speichereinrichtung gespeicherten Bilder auf Basis der durch die erste Feststelleinrichtung festgestellten Zustände ausliest und die ausgelesenen Bilder in die Anzeigedaten einfügt.

10. Netzwerkzugriffs-Verwaltungssystem nach Anspruch 1, das des Weiteren umfasst:

eine Zugriffseinrichtung (112D), die periodisch auf die in der ersten Speichereinrichtung gespeicherten Adressen zugreift;

eine zweite Feststelleinrichtung (112D), die Zustände des Netzwerkes feststellt, die es der Zugriffseinrichtung gestatten, auf die Adressen zuzugreifen; und

eine zweite Änderungseinrichtung (112D), die die Anzeigedaten entsprechend einem Ergebnis der durch die zweite Feststelleinrichtung durchgeführten Feststellung ändert.

11. Netzwerkzugriffs-Verwaltungssystem nach Anspruch 10, das des Weiteren umfasst:

eine funfte Speichereinrichtung (124), die miteinander verknüpft die Zustände und dreidimensionalen Bilder speichert, die Kennzeichnungen des Inhalts der Zustände sind; und

eine Einrichtung (112), die die in der funften Speichereinrichtung gespeicherten Bilder auf Basis der durch die erste Feststelleinrichtung festgestellten Zustände ausliest und die ausgelesenen Bilder in die Anzeigedaten einfügt.

12. Netzwerkzugriffs-Verwaltungssystem nach Anspruch 1, das des Weiteren umfasst:

eine sechste Speichereinrichtung (2121), die Informationen über wenigstens eine Anzeigeleistung auf dem wenigstens einen Client-Endgerät speichert; und

eine dritte Änderungseinrichtung (121B), die die Anzeigedaten auf Basis wenigstens der Anzeigeleistung ändert, die in der sechsten Speichereinrichtung gespeichert ist, wenn die Anzeigedaten zu dem wenigstens einen Client-Endgerät gesendet werden.

13. Netzwerkzugriffs-Verwaltungssystem nach Anspruch 1, dadurch gekennzeichnet, dass das Netzwerk WWW ist und die Anzeigedaten strukturierte Dokumentendaten sind, die in VRML beschrieben sind.

14. Netzwerkzugriffs-Verwaltungsverfahren zum Abwickeln von Informationsübertragungen zwischen wenigstens einem Client-Endgerät (151, 152) und einem Netzwerk mit Informationsressourcen (130, 140, 170, 180), das umfasst:

einen Speicherschritt zum Speichern von Adressen von Informationselementen, auf die das wenigstens eine Client-Endgerät in der Vergangenheit zugegriffen hat;

einen Analysierschritt des Analysierens von Attributen der gespeicherten Adressen, wobei die Attribute der Adressen die Häufigkeit von Zugriffen auf die gespeicherten Adressen einschließen;

einen Erzeugungsschritt des Erzeugens von Anzeigedaten, die auf dem wenigstens einen Client-Endgerät anzuzeigen sind, entsprechend einem Ergebnis der Analyse;

einen Sendeschritt des Sendens der erzeugten Anzeigedaten zu dem wenigstens einen Client-Endgerät, dadurch gekennzeichnet, dass:

mit dem Erzeugungsschritt die Anzeigedaten erzeugt werden, indem die Adressen in Abhängigkeit von der Häufigkeit von Zugriffen auf die Adressen geordnet werden.

15. Netzwerkzugriffs-Verwaltungsverfahren nach Anspruch 14, dadurch gekennzeichnet, dass die in dem Erzeugungsschritt erzeugten Anzeigedaten Karten-Daten sind, die eine Karte darstellen, in der Anker für die Adressen angeordnet sind.

16. Netzwerkzugriffs-Verwaltungsverfahren nach Anspruch 14, das des Weiteren umfasst:

einen Anzeigedaten-Speicherschnitt des Speicherns von Anzeigedaten, die in der Vergangenheit zu dem wenigstens einen Client-Endgerät gesendet wurden; und

einen Änderungsschnitt des Ändern der in der Vergangenheit gesendeten Anzeigedaten zu den erzeugten Anzeigedaten.

17. Netzwerkzugriffs-Verwaltungsverfahren nach Anspruch 14, das des Weiteren umfasst:

einen Anzeigedaten-Speicherschnitt des Speicherns von Anzeigedaten, die in der Vergangenheit zu dem wenigstens einen Client-Endgerät gesendet wurden;

einen Vergleichsschnitt des Vergleichens der in der Vergangenheit gesendeten Anzeigedaten mit den erzeugten Anzeigedaten, um so eine Änderung der in der Vergangenheit gesendeten Anzeigedaten festzustellen, und einen Wiedergabeschnitt des Wiedergebens der mit dem Prüfschnitt festgestellten Änderung in den erzeugten Anzeigedaten.

18. Netzwerkzugriffs-Verwaltungsverfahren nach Anspruch 14, das des Weiteren umfasst:

einen Bildspeicherschnitt des Speicherns von Bildern, die als Anker für die Adressen dienen, verknüpft mit den Adressen; und

einen Einfugeschnitt des Auslesens der in dem Bildspeicherschnitt gespeicherten Bilder auf Basis der gespeicherten Adressen und des Einfügens der ausgelesenen Bilder in die erzeugten Anzeigedaten.

19. Netzwerkzugriffs-Verwaltungsverfahren nach Anspruch 14, das des Weiteren umfasst:

einen Zugriffsschnitt des periodischen Zugreifens auf die gespeicherten Adressen; einen Feststellschnitt des Feststellens von Zuständen der Informationselemente, die an Orten gespeichert sind, die durch die Adressen angegeben werden, auf die zugegriffen wird; und

einen Änderungsschnitt des Ändern der zu dem wenigstens einen Client-Endgerät zu sendenden Anzeigedaten entsprechend einem Ergebnis der mit dem Feststellschnitt durchgeführten Feststellung.

20. Netzwerkzugriffs-Verwaltungsverfahren nach Anspruch 14, das des Weiteren umfasst:

einen Zugriffsschnitt des periodischen Zugreifens auf die gespeicherten Adressen;

einen Feststellschnitt des Feststellens von Zuständen des Netzwerkes, das die Erlangung von Zugriff auf die Adressen zulässt; und

einen Veränderungsschnitt des Verändern der zu der wenigstens einen Client-Endgerät zu sendenden Anzeigedaten entsprechend einem Ergebnis der mit dem Feststellschnitt durchgeführten Feststellung.

21. Computerprogrammerzeugnis, das einen Programmcode zum Ausführen aller Schritte des Netzwerk-Verwaltungsverfahrens nach Anspruch 14 speichert.

**Claims:** EP 926591 B1

1. Systeme de gestion d'accès à un réseau (100), qui connecte au moins un terminal de client (151, 152) et un réseau ayant des ressources d'informations (130, 140, 170, 180) et qui effectue des transmissions d'informations entre ledit au moins un terminal de client et ledit réseau, comprenant :

des premiers moyens de mémorisation (122) pour mémoriser des adresses d'éléments d'informations auxquelles ledit au moins un terminal de client a accès dans le passé ;

des moyens d'analyse (112A) pour analyser des attributs des adresses mémorisées dans lesdits premiers moyens de mémorisation, lesdits attributs des adresses comprenant la fréquence des accès auxdites adresses mémorisées ;

des moyens de creation (112B) pour creer des donnees d'affichage qui refletent un resultat de l'analyse effectuee par lesdits moyens d'analyse ; et

des moyens d'envoi (112C) pour envoyer les donnees d'affichage creees par lesdits moyens de creation audit au moins un terminal de client, caracterise en ce que

lesdits moyens de creation (112B) creent lesdites donnees d'affichage en agencant les adresses en fonction de la frequence des acces auxdites adresses.

2. Systeme de gestion d'accès a un reseau selon la revendication 1, caracterise en ce que les attributs des adresses comprennent au moins l'un de types des adresses et de types d'informations auxquels les adresses sont attribuees.

3. Systeme de gestion d'accès a un reseau selon la revendication 1, caracterise en ce que lesdites donnees d'affichage sont des donnees de mappe representant une mappe dans laquelle des ancrs pour les adresses memorisees dans lesdits premiers moyens de memorisation sont disposees.

4. Systeme de gestion d'accès a un reseau selon la revendication 1, comprenant en outre :

des deuxiemes moyens de memorisation (125) pour memoriser des donnees d'affichage envoyees dans le passe audit au moins un terminal de client ; et

des moyens (112B) pour remplacer les donnees d'affichage memorisees dans lesdits deuxiemes moyens de memorisation par les donnees d'affichage creees par lesdits moyens de creation.

5. Systeme de gestion d'accès a un reseau selon la revendication 1, comprenant en outre :

des deuxiemes moyens de memorisation (125) pour memoriser des donnees d'affichage envoyees dans le passe audit au moins un terminal de client ;

des moyens de verification (112) pour verifier les donnees d'affichage memorisees dans lesdits deuxiemes moyens de memorisation avec les donnees d'affichage creees par lesdits moyens de creation, determinant de ce fait un changement dans les donnees d'affichage memorisees dans lesdits deuxiemes moyens de memorisation ; et

des moyens (112B) pour repercuter le changement determine par lesdits moyens de verification dans les donnees d'affichage creees par lesdits moyens de creation.

6. Systeme de gestion d'accès a un reseau selon la revendication 1, comprenant en outre :

des troisiemes moyens de memorisation (124) pour memoriser, en association avec lesdites adresses, des images qui servent d'ancres pour lesdites adresses ; et

des moyens (112) pour extraire les images memorisees dans lesdits troisiemes moyens de memorisation, sur la base des adresses memorisees dans lesdits premiers moyens de memorisation, et pour coller les images extraites dans les donnees d'affichage creees par lesdits moyens de creation.

7. Systeme de gestion d'accès a un reseau selon la revendication 6, caracterise en ce que lesdits troisiemes moyens de memorisation memorisent, en association les uns avec les autres, des types desdites adresses et des images tridimensionnelles qui sont des caracterisations des elements d'informations memorises dans lesdites adresses.

8. Systeme de gestion d'accès a un reseau selon la revendication 1, comprenant en outre :

des moyens d'accès (112D) pour acceder periodiquement aux adresses memorisees dans lesdits premiers moyens de memorisation ;

des premiers moyens de determination (112D) pour determiner des etats des elements d'informations memorises a des emplacements specifiques par les adresses auxquelles lesdits moyens d'accès ont accede ; et

des premiers moyens de modification (112B) pour modifier lesdites donnees d'affichage conformement a un resultat de la determination effectuee par lesdits premiers moyens de determination.

9. Systeme de gestion d'accès a un reseau selon la revendication 8, comprenant en outre :

des quatriemes moyens de memorisation (124) pour memoriser, en association les uns avec les autres, lesdits etats et images tridimensionnelles qui sont des caracterisations de contenus desdits etats ; et

des moyens (112) pour extraire les images memorisees dans lesdits quatriemes moyens de memorisation, sur la base des etats determines par lesdits premiers moyens de determination, et pour coller les images extraites dans lesdites donnees d'affichage.

10. Systeme de gestion d'accès a un reseau selon la revendication 1, comprenant en outre :

des moyens d'accès (112D) pour acceder periodiquement aux adresses memorisees dans lesdits premiers moyens de memorisation ;

des deuxiemes moyens de determination (112D) pour determiner des etats dudit reseau qui permettent auxdits moyens d'accès d'accéder auxdites adresses ; et

des deuxiemes moyens de modification (112B) pour modifier lesdites donnees d'affichage conformement a un resultat de la determination effectuee par lesdits deuxiemes moyens de determination.

11. Systeme de gestion d'accès a un reseau selon la revendication 10, comprenant en outre :

des cinquiemes moyens de memorisation (124) pour memoriser, en association les uns avec les autres, lesdits etats et images tridimensionnelles qui sont des caracterisations de contenus desdits etats ; et

des moyens (112) pour extraire les images memorisees dans lesdits cinquiemes moyens de memorisation, sur la base des etats determines par lesdits premiers moyens de determination, et pour coller les images extraites dans lesdites donnees d'affichage.

12. Systeme de gestion d'accès a un reseau selon la revendication 1, comprenant en outre :

des sixiemes moyens de memorisation (2121) pour memoriser des informations concernant au moins une performance d'affichage dudit au moins un terminal de client ; et

des troisiemes moyens de modification (121B) pour modifier lesdites donnees d'affichage, sur la base au moins de la performance d'affichage memorisee dans lesdits sixiemes moyens de memorisation, lorsque lesdites donnees d'affichage sont envoyees audit au moins un terminal de client.

13. Systeme de gestion d'accès a un reseau selon la revendication 1, caracterise en ce que ledit reseau est WWW, et lesdites donnees d'affichage sont des donnees de documents structurees decrites en VRML.

14. Procédé de gestion d'accès a un reseau pour traiter des transmissions d'informations entre au moins un terminal de client (151, 152) et un reseau ayant des ressources d'informations (130, 140, 170, 180), comprenant :

une etape de memorisation consistant a memoriser des adresses d'elements d'informations auxquelles ledit au moins un terminal de client a accede dans le passe ;

une etape d'analyse consistant a analyser des attributs des adresses memorisees, lesdits attributs des adresses comprenant la frequence des acces auxdites adresses memorisees ;

une etape de creation consistant a creer des donnees d'affichage devant etre affichees sur ledit au moins un terminal de client, conformement a un resultat de l'analyse ;

une etape d'envoi consistant a envoyer les donnees d'affichage creees audit au moins un terminal de client, caracterise en ce que

ladite etape de creation cree lesdites donnees d'affichage en agencant les adresses en fonction de la frequence des acces auxdites adresses.

15. Procede de gestion d'accès a un reseau selon la revendication 14, caracterise en ce que les donnees d'affichage creees dans ladite etape de creation sont des donnees de mappe representant une mappe dans laquelle des ancrs pour lesdites adresses sont disposees.

16. Procede de gestion d'accès a un reseau selon la revendication 14, comprenant en outre :

une etape de memorisation de donnees d'affichage consistant a memoriser des donnees d'affichage envoyees dans le passe audit au moins un terminal de client ; et

une etape de remplacement consistant a remplacer les donnees d'affichage envoyees dans le passe par les donnees d'affichage creees.

17. Procede de gestion d'accès a un reseau selon la revendication 14, comprenant en outre :

une etape de memorisation de donnees d'affichage consistant a memoriser des donnees d'affichage envoyees dans le passe audit au moins un terminal de client ;

une etape de verification consistant a verifier les donnees d'affichage envoyees dans le passe avec les donnees d'affichage creees, determinant de ce fait un changement dans les donnees d'affichage envoyees dans le passe ; et une etape de repercussion consistant a repercuter le changement determine par ladite etape de verification dans les donnees d'affichage creees.

18. Procede de gestion d'accès a un reseau selon la revendication 14, comprenant en outre :

une etape de memorisation d'images consistant a memoriser, en association avec lesdites adresses, des images qui servent d'ancres pour lesdites adresses ; et

une etape de collage consistant a extraire les images memorisees dans ladite etape de memorisation d'images, sur la base des adresses memorisees, et a coller les images extraites dans les donnees d'affichage creees.

19. Procede de gestion d'accès a un reseau selon la revendication 14, comprenant en outre :

une etape d'accès consistant a acceder periodiquement aux adresses memorisees ;

une etape de determination consistant a determiner des etats des elements d'informations memorises a des emplacements specifiques par les adresses qui ont fait l'objet d'accès ; et

une etape de modification consistant a modifier les donnees d'affichage devant etre envoyees audit au moins un terminal de client, conformement a un resultat de la determination effectuee par ladite etape de determination.

20. Procede de gestion d'accès a un reseau selon la revendication 14, comprenant en outre :

une etape d'accès consistant a acceder periodiquement aux adresses memorisees ;

une etape de determination consistant a determiner des etats dudit reseau qui permettent d'obtenir des acces auxdites adresses ; et



une etape de modification consistant a modifier les donnees d'affichage devant etre envoyees audit au moins un terminal de client, conformement a un resultat de la determination effectuee par ladite etape de determination.

21. Produit-programme informatique memorisant un code de programme pour executer toutes les etapes du procede de gestion d'accès a un reseau selon la revendication 14.

15/7/17 (Item 2 from file: 16)

Gale Group PROMT(R)

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### **Avatars have to crawl before they walk**

Interactivity , p 21

June , 1997

#### **Text:**

TRYING TO DEFINE TODAY'S VRML IN ORDER TO BUILD THE FUTURE.

**Virtual reality** on the Web could be very cool. It could be like William Gibson's Neuromancer or Neal Stephenson's Snow Crash. It could bring a new era of human-to-human and human-to-computer interaction. VRML, the **virtual reality** modeling language, could be the catalyst that makes it all happen. Then again, it could be a head-first, eyes-closed leap into a smoke-filled battleground. Last year, on VRML's second birthday, there wasn't much to show for all the hype. A few vendors were honing tools and a few brave pioneers were building worlds, but the implementations fell far short of the dream. In the least charitable interpretation, VRML was a toy for tech junkies willing to tolerate painfully slow downloads and mutually incompatible plug-ins for a chance to stutter-step among a handful of polygons. It wasn't the apotheosis of cyberpunk, but it had potential. After all, VRML 1.0 was just a start. It

was intended only to cover the basics. Things would improve with the next revision. In August 1996, after lengthy debate, the VRML 2.0 spec was approved. As of this writing, programmers have had a few months to modify existing tools and get some new ones into beta, and bleeding-edge content developers have had enough time to get their fingernails dirty. The virtual dust is beginning to settle around the VRML community, and the outlines that constitute the shape of the near-term future are just becoming visible.

VRML could be a lot of things eventually. But what is it now? What are the possibilities? And, most important, what does it mean for interactive content developers?

A lot of politics. A lot of partnering. A fair amount of grumbling. A few level heads. Not much money. And a standard that isn't quite a standard.

#### A Rough Start

VRML 1.0 began life in 1994, but its roots extend nearly a decade back to the first ultraexpensive simulation systems. In these early ventures into realtime, immersive 3D broke the complex task of simulating artificial environments into many parts: input of control data; output of visual, aural, even physical feedback data; storage and manipulation of 3D worlds; and communication of VR data to other researchers.

VRML simply codified these subtasks into a standardized format based on a VR file format developed by Silicon Graphics for their Inventor Graphics Toolkit back in 1992. Silicon Graphics opened their format to the developer community, calling it OpenInventor. SGI's Mark Pesce proposed it as the VRML 1.0 specification in May 1994, and it was ratified the following October. (Riding the coattails of HTML, the acronym originally stood for **Virtual Reality** Markup Language. However, the name soon morphed into the more appropriate **Virtual Reality Modeling Language**.)

The ink was barely dry on the VRML 1.0 spec when architects of VRML worlds began to complain that it wasn't enough, didn't go far enough, didn't have sufficient power to do the kinds of things they wanted to do. According to the spec's early supporters, it was intended only to get the ball rolling, not as a final implementation. In that spirit, many tool vendors used it as a jumping-off point rather than a rigid guide.

Meanwhile, by the end of 1995, a number of competing forces were busy revising the spec, among them Microsoft, Sun, Apple, and Silicon Graphics. At a special meeting held at Siggraph in August 1996, Silicon Graphics was declared the winner based on their Moving Worlds proposal, and the race to ratify VRML 2.0 was on. The revision closed a number of holes in the 1.0 spec, but, like its predecessor, it was regarded as an incremental step rather than a be-all, end-all solution.

VRML 2.0 added a gaggle of spiffy new nodes (VRML-speak for objects--as in object-oriented programming, not 3D primitives). Available nodes include terrain elevation mapping, panoramic backgrounds, fog, video, audio, 3D object motion, and a broader range of shape descriptions. In addition they add interactive functions such as collision detection to keep you from walking through walls and sensor nodes to create things like proximity mines that blow up when you move near them. Moreover, header information is included to add copyright information and tip off browsers to the best form of navigation to use. Two of the more interesting 2.0 nodes are embedded JavaScripts and the ability to add custom nodes and modify existing ones.

The last two additions, at first glance, seem appropriate and forward thinking. Like DLLs, plug-in extensions, and other ways to customize software tools, these nodes offer the opportunity to extend VRML 2.0 to suit the needs of a given project. However, this opportunity also has the potential to turn a cute little jack-in-the-box into Pandora's box.

#### The VRML Advantage

At its heart, VRML is nothing more than a description of objects in 3D space: "Here is a box, this tall, this wide, and this color." When you hit a VRML page on the Web, your browser sees VRML information and, assuming

you have the right sort of VRML viewer plug-in installed, the description gets passed to the rendering engine within the plug-in.

(The line between browser and VRML viewer is becoming more confused every day. Most VRML worlds are designed to be seen through a viewer plug-in for Netscape Navigator or Microsoft Internet Explorer. However, VRML viewers are being built into those browsers as standard equipment. Some companies provide a VRML browser shell and treat Navigator or Explorer as an HTML plug-in. For the sake of brevity, I'll refer to VRML viewer software as a browser whether the VRML part is built in, plugged in, or a

little of both.)

A VRML-equipped browser places a VRML world's boxes, cones, spheres, colors, and textures in 3D space and renders them using the same technology as other 3D modeling programs. As you move around, the browser renders your point of view on the fly. The big advantage of VRML is that scene descriptions can be very small. Entire 3D worlds can exist in only a few hundred kilobytes. Contrast this with a single prerendered graphic, uncompressed, which might take up 500kB or more. Compared to most file formats, VRML is extremely compact.

Another advantage is that worlds can be dynamic, changing over time and responding to user interactions. Once a world has been downloaded to a client, further interactions require very little network traffic. Only new information, such as changes in the scene, need to be sent. Rendering takes advantage of the client's 3D API and it can be offloaded to a 3D graphics accelerator card.

Even this highly efficient method of sharing data can be enhanced further. S3 has announced a technique that stores prerendered textures on the client side (eventually on a graphic board). Newfire's Torch prerenders parts of a scene to take some of the burden off the client. Newfire just partnered with Diamond, so their process might soon be accelerated by a special card. VideoLogic's new graphics boards use a slightly different rendering architecture called PowerVR to achieve high performance. It's targeted at gaming, but it could include VRML.

Of course, these methods aren't included in the 2.0 spec, but they aren't excluded either. Consequently, companies drift from the standard in search of an edge over the competition.

#### Diverging Worlds

Wandering the worlds of VRML, you discover lots of companies taking advantage of VRML's extensibility. For example, there's no reason you can't build an avatar that dances or talks when you press specific keys, or a world where people can scrawl graffiti on the walls and their actions update information on the server for all to see.

But the VRML spec doesn't specify explicitly how to make avatars slam-dance or how virtual spray paint should drip down virtual walls. Companies that want these capabilities have had to build customized browser software that understands such things.

This very flexibility casts doubt on the notion that VRML 2.0 is a standard. If you want to include special capabilities, nothing in 2.0 will stop you. If you do it right, browsers that don't understand will skip the nonstandard parts and render the basic scene without the special features.

Sure, it's possible to build a genetic VRML 2.0 world that can be viewed through any 2.0capable browser--assuming both the browser and the server support all the standard 2.0 ti. inclions, which none of them do just yet--but who would want to give up the competitive advantage of providing special features?

Content developers, as well as makers of server technology like black sun and OZ, are torn between 100% compliance and differentiating their products. Both groups want everyone on the Web to be able to visit their sites, but at the same time they want their sites to be special enough to attract more visitors than the next guys. So they add Custom extensions (called protos), modify a browser or build one that can take advantage of the special features, and give away the browser. They all hope their goodies will catch the public's attention. If enough people flock to their flavor of VRML, then browser builders like Netscape and Microsoft may build in their extensions, effectively making them the next standard. And if you're aiming to create a new standard based on your work, it shouldn't surprise anyone if you don't go out of your way to support competitors' special features.

Browser makers face the same dilemma. They want to be fully compliant, yet able to deliver what content developers are offering. Nonetheless, even though VRML 2.0 is nearly a year old, different VRML browsers will display the same world differently. None supports the entire spec and none supports the full gamut of custom extensions. That is, you still need an assortment of proprietary browsers, plug-ins, or even special graphics hardware to visit all the "2.0-compliant" worlds on the Web. Obviously, this makes for confused consumers, which in turn makes for both opportunities and headaches for VRML developers.

Compared to current 3D games like Tomb Raider and Quake, VRML still looks pitiful. (And, whether or not it's a fair comparison, games like Quake and movies like Lawnmower Man set the tone for the public's expectation of VRML.) The slow interactivity, awkward user interfaces, and lack of visual detail make VRML look like mid80s wireframe games. Presented with a better, faster, neater technology, developers can't be blamed for leaning in that direction at the cost of compatibility. Some of the crudeness of current VRML content results from deliberate decisions to minimize download time, some of it is in the spec, and some of it can be blamed on lack of good development tools.

Download time will be reduced someday (if compression and acceleration technologies don't solve the problem first, the spec will evolve, and the

world creation tools will show up as 1997 wears on. But today, content creators need to decide which variation of the VRML standard they want to develop for. To take advantage of some of the neatest enhancements--chat, animated avatars, or special acceleration--you need to support one company's server technology or browser. Even if you want to be completely generic, you need to watch out for 2.0 features that aren't yet implemented in every server or browser.

For example, Silicon Graphics Cosmo Tools (see review, p. 54) may be the most comprehensive VRML authoring tool available, but its output plays most consistently using a Silicon Graphics browser on a Silicon Graphics box. Note also that, while authoring tools exist for all platforms, no VRML

2.0 browsers are available for the Mac yet (see "Outside Looking In," p. 45). Many observers believe the basic 2.0 browser issues will be solved by the end of this summer, but some estimate that it might take another year, and some don't think it will happen until VRML 3.0 (or something better) comes along.

If you were making VRML tools, wouldn't you implement the complete 2.0 spec before adding special capabilities? Kjartan Emilsson, CTO at OZ, explains why you might not. "VRML will continue to get better, and eventually it could become a true standard, but I can't wait around for that to happen," he insists. "We'll support it, but we're also moving ahead." This seems to be the prevailing attitude in the VRML community.

#### The VRML Framework

A VRML 2.0 file, which usually bears the extension.wrl, is based on four types of elements, all of which are considered types of nodes or ways to manipulate nodes:

- \* the header, which tells the browser what type of VRML file it is and what character set is being used
- \* prototypes, or custom nodes or modifications of standard nodes
- \* routes, which are used to wire nodes together so, for instance, clicking on a cube described in one node affects file color of a sphere described in a different node contents such as 3D objects, interpolators, sensors, and scripts.

These element types may be supplemented by fields and field values (parameters and parameter values), comments, and defined node names and used node names (for object-oriented programming).

The 2.0 spec defines 54 node types that contain information about 3D objects and their positions, colors, lights, viewpoints, animation timers, sensors, interpolators (for adding keyframe information for animation), sounds, and video.

Four basic primitives -- box, cone, cylinder, and sphere-- are the building blocks of VRML. By specifying these shapes of different sizes, in different locations, in different aspects, with different colors, textures, and lighting, you can build just about anything. Shape nodes can be grouped to create more complex shapes. A few advanced shape nodes such as extrusion and elevation let you create even more complex contours. If you're really adventurous, you can specify LOD (level of detail) nodes to be swapped at run time as your viewpoint moves closer and farther away from an

**object.** Nodes can specify **links** to other pages, other nodes, or other files. Nodes can even contain other nodes.

A VRML world need not contain all of these things, and you don't need to understand the spec to create them. Using a VRML authoring tool such as IDS V\*Realm Builder 2.0, Virtus VRML Toolkit, ParaGraph Internet3D Space Builder 2.0, Caligari Tmespace3, Silicon Graphics Cosmo Worlds, or a general-purpose modeling tool with VRML features such as Kinetix 3D Studio MAX, NewTek Lightwave 5.0, or Microsoft Softimage 3.5, you can create VRML worlds without writing a bit of code. According to a spokesman for Silicon Graphics, "You shouldn't need to do any programming to create a VRML world. It only makes sense that you should have 3D-oriented tools to build 3D worlds."

Designer Worlds

Of course, just because you don't need to learn how VRML works doesn't mean you shouldn't. There are special considerations that simplify creating worlds and enhance the viewing experience.

Some are obvious. Limiting the total number of polygons in a world results in a smaller file and a less time-consuming download. Others are more subtle. For instance, reusing an object in different sizes, colors, and orientations is more data efficient than defining it multiple times. Some are a matter of philosophy, such as whether VRML is the most appropriate format for getting your message across.

According to Lisa Goldman, president of Construct, a content developer in San Francisco, "Some clients want to use VRML for everything, and we have to teach them that it isn't always the right tool for the job. Yes, you could build a VRML site that lists products and services, but plain old HTML works best for prices, addresses, and other kinds of text-based information. In some situations, Java, Shockwave, or animated GIFs are the most appropriate tools. Usually, we end up with a hybrid that combines VRML with other technologies."

Robert Weideman of TGS (Template Graphics Software) agrees. "VRML isn't great for getting across highly detailed representations of things," he says. "There are some wonderful 3D panorama viewers available for the Web that present nearly photorealistic images. If you wanted to do a virtual tour of Notre Dame, it would be more effective to display a series of photo-based panoramas than model the building in VRML."

The first step in making a sensible decision is to determine how many polygons it will take to satisfy your needs. If the number runs into the many thousands, consider other technologies. There's no built-in limit to the number of polygons or special items in a VRML world, but dense worlds will take longer to download and put added strain on the client. Most worlds online today use between 1,000 and 2,000 polygons. That range doesn't make for a very rich environment, but it's a practical target.

The next step is to invest in a handful of VRML books, launch any old text editor, and start programming. Josh White's excellent book *Designing SD Graphics* (Wiley Computer Publishing) includes loads of pointers for designing and optimizing VRML worlds.

Of course, the new generation of VRML authoring tools will ease the learning curve, but before you rush out and buy another tool, take a look at what you already have. Many 3D modeling tools can export VRML worlds or VRML objects, including Kinetix 3D Studio MAX, NewTek LightWave, 3D\*Eye TriSpectives, Caligari TrueSpace3, and Softimage. Even high-end simulation packages like those from Sense8, Nichimen Graphics, MultiGen, and Prosolvica Clams can export VRML.

The other side of the coin is that generalpurpose 3D modeling packages don't provide access to the full gamut of VRML features, including actions that occur when an object is clicked, scripting, and the like. Also, these tools tend to generate objects with relatively large polygon counts.

Specialized VRML authoring programs generate smaller files that include VRML's special interactive capabilities. Their main drawback is the lack of sophistication of their modeling tools. If you hope to incorporate models built in a general-purpose modeling package, be sure the VRML authoring program you buy can import data from your modeler.

Designing VRML worlds does require some savvy. For instance, if Myst's

limited number of viewpoints is at one end of the scale and unrestricted freedom of motion is at the other, where along the line do you want your world to be? By orchestrating the landscape carefully you can direct people to points of interest subtly, avoiding the sprawling empty spaces that seem to characterize some VRML sites.

Consider Disneyland or any amusement park. Strategic placement of walls and paths creates the illusion of a complete, coherent world, yet most of the buildings are nothing more than facades. Building a functional world may mean sacrificing details. Spend your polygon budget on the key attractions and scrimp on the background filler.

Of course, when you're building a world from scratch, everything is open to question. Do you really need floors, chairs, walls, or even up and down? How close to reality does your world need to be, and how far afield can it range? What types of user interfaces work best in an immersive 3D situation?

The best thing about issues of world design is that they're relatively universal. Usually, they can be resolved without leaving the 2.0 spec. Other issues crop up, however, for which proprietary solutions may be the only answer.

#### Populating Worlds

One of the most hotly contested aspects of VRML is its treatment of avatars. As of this writing, no standard exists for describing animating, or moving avatars between worlds. One reason is that VRML doesn't specify a fixed scale for spatial measurement -- everything is simply measured in units. In one world, a unit might be roughly equivalent to a meter--this interpretation is loosely agreed upon within the VRML community -- but in another world the unit might be feet or inches or miles.

The measure doesn't really matter in a self-contained world. But if your world's avatars are six units tall -- implying that one unit roughly equals one foot -- and another world is built on the assumption that one unit roughly equals one meter, then avatars traveling from that world to yours would appear more than 25 feet tall. Instances have been reported in which people have tried to import a custom avatar that was larger than the world itself.

Another problem with avatars is that the 2.0 spec offers no standard way to animate them. Just about any type of object, including an avatar,

can be given a motion path; however, no consensus exists regarding a standard set of movements. Nor is there a standard way to bring previously assigned movements into a world--a head nod in one world might be mapped to

a back flip in another.

Finally, a number of companies are working on avatar behaviors. When you walk into a room full of people and start interacting, your expressions, movement, reactions, and body language are an integrated mix of conscious and unconscious responses. You don't think "Oh, that was amusing, so I'll activate the smile muscles in my face, put my hands on my stomach, rock back and forth a bit, and make laughing sounds," and you certainly don't have to type all those instructions on a keyboard.

Even if you assign a function key to the actions involved with showing

amusement, it doesn't make for fluid interpersonal exchanges. Until we all have motion-capture devices sensitive enough to pick up our facial expressions and map them onto our avatars in real time, we'll probably want to employ some combination of automated and manually initiated responses. For instance, automatic behaviors might initiate nodding while someone else is talking or turning to face the door when someone new walks into the room. Responses under manual control might include amusement, anger, interest, uninterest, happiness, boredom, and the like.

Adding behaviors to avatars has brought to light interesting possibilities such as artificial intelligence. AI avatars might act as tour guides, carry sandwich-board advertisements, or even masquerade as people.

ParaGraph, while very much in favor of the 2.0 standard, is busy working on adding behaviors that give avatars rudimentary intelligence. Their prototype AI avatars react to virtual explosions, and cat and mouse avatars behave like, well, cats and mice. The company's ultimate goal is to populate worlds with such avatars. Go to an ancient Roman world and chat with Caesar or, more likely, go to Nike World and ask the Michael Jordan avatar what type of shoe he recommends for the casual jogger.

Likewise, the folks at OZ are busy populating their VR nightclubs with AI avatars. (There's nothing worse than walking into an empty nightclub.) Some of these virtual lounge lizards even employ a little Freudian psychology to keep up appearances; remember the old Eliza program that mimicked a psychotherapist by responding to anything you typed with a noncommittal statement or another question?

You: I keep dreaming about my mother. Computer: Tell me about it.

You: Well, she's shaped like a donut. Computer: How do you feel about that? You: It doesn't look much like my mother. Computer: You keep mentioning your mother. Do you want to talk about that some more?

"Sometimes, people just like talking to an artificial person," explains Andrew deVries, VP of marketing at OZ. "Some people spend a lot of time with the Als. Some of the personalities we've created are actually quite popular. We also have people who get really upset when they find out they've spent the last 20 minutes talking to a program.

"When we're finished, developers will be able to apply multiple personality matrices to an AI, suggesting possible actions and reactions depending on particular situations, and that gives them quite a wide variety of personalities. Right now, we only have a few personalities, all built by one of our programmers."

In a conspiratorial whisper, he adds, "I'm a little worried about that, actually. He's a little on the dark and twisted side himself. So far, all his Als have all been cynical and quirky. We have to get some other people working on more upbeat Als."

Black sun is also entering the AI avatar space with their SpokesBot technology. An avatar wanders through one of their worlds and eavesdrops on conversations (public, not private chats). When it overhears one of a selection of keywords, it insinuates itself into the conversation and starts touting the virtues of product X. If this sounds to you like a cybernightmare, rest assured that, according to black sun, SpokesBots will be far more effective than static banner ads.

In the interest of civility, black sun derived a Community Bill of Rights that's actually part of their licensing contracts. Among the list of dos and don'ts are stipulations that SpokesBots can't listen in on private



chats, must identify themselves as Bots within the first sentence, and must go away if they aren't welcome. (Since this is fairly new territory, the company was forced to draw upon the fair-marketing and truth-inadvertising guidelines established in the 1930s, throwing in a bit of Isaac Asimov's Rules of Robotics as well.) For the time being, an avatar can be expected to behave itself only in the worlds for which it was designed. If you're designing for a particular system or server, you'll need to check the manufacturer's specifications for avatar construction. Many custom server companies, like OZ, allow only a handful of prebuilt avatars with a few user-definable settings. Other systems are wide open.

For the moment, very few dedicated avatar construction tools exist, among them Sven Technologies Avatarmaker and Nucleus Atomic3D (which isn't yet VRML compliant). However, many VRML authoring tools can import models created by popular 3D animation packages complete with skeletal and IK data. OnLive! Technologies uses 3D Studio 3DS files; Worlds Inc.'s AlphaWorld (recently renamed ActiveWorld) uses RenderWare RWX files; most others are still using WRL (VRML 1.0) files.

#### Bones of Contention

Avatar handling is only one area in which VRML could stand some improvement. Some developers contend that 2.0 isn't sufficiently object-oriented. Some want improvements in the collision detection routines. Some want a binary file format (a likely addition to the next rev). Most want hooks for graphics acceleration hardware. But the most common complaint is that the spec doesn't allow for conversations between visitors in a world, otherwise known as chat.

Many of the earliest VRML sites were essentially 3D chat rooms. Enter the world, grab an avatar, and strike up a conversation. Chat continues to be the major draw (see "Case Study: OnLive! Technologies" at [www.eyemedia.com](http://www.eyemedia.com)), but companies that specialize in chat-based worlds have had to resort to custom solutions and nonstandard browsers. This isn't a concern in worlds that are meant to be a solitary immersive experience, but if you want to build virtual nightclubs, multi-user gaming environments, and the like, you'll want to look at the various solutions and follow their guidelines.

In multi-user environments, a common issue is persistence or shared state. If I enter a world that doesn't feature shared state and rearrange the furniture, I'll be the only person who sees the change. If the world lacks persistence and I come back later, I'll find the furniture back in its original position.

To provide a more convincing sense of interaction, some companies want to give users the ability to build their own structures, move things around, and otherwise interact creatively with the environment. On the other hand, letting visitors modify your carefully constructed world might not be such a hot idea--there are reasons they don't let people rearrange the paintings in the Louvre. For the time being, a special server is required to let users modify objects and their positions in a VRML space.

Everyone we talked to claimed to be in favor of the standard, yet nearly all have their own agendas and their own custom features. As one tool vendor pointed out, "If you try to please everyone, you please no one. If you cater to one person, you alienate the rest."

Many insist that VRML is the pet project of Silicon Graphics, which steers the spec toward its own goals. Silicon Graphics representatives are

quick to point out that the 2.0 spec was ratified by vote, not forced down everyone's throat by a powerful consortium (as the DVD spec was). Whatever the case, VRML is a hotbed of controversy.

This state of affairs has effects both positive and negative. On the positive side, since people are constantly talking about improving the spec, VRML continues to evolve. If this continues, it will grow to incorporate advances in technologies such as data compression, higher speed connections, and new graphics accelerators. The 2.0 spec is less than a year old and robust tools are just beginning to hit the market. Few, if any, content creators have mastered all that 2.0 provides. Hopefully, once the browser issues begin to settle, we'll see some remarkable new worlds.

The negative side of the controversy is that it makes VRML a moving target rather than a standard. There's no guarantee that what you create today will be accessible today or tomorrow, and no guarantee that someone's proprietary technology won't blow your site (and VRML itself) out of the water.

Unfortunately, the VRML scene is littered with hidden agendas. Companies that have large investments in particular technologies or pamperships with companies offering special goodies may pontificate about the need for standards, but what they really mean is "our standard." It's doubtful these issues will be resolved with 3.0 or 4.0 or whatever comes after that. The way the Web is evolving, don't be surprised if VRML becomes outdated even before avatars learn to walk.

Those with a vested interest in specific technologies may well be able to carve up the Webs virtual space to their liking. Perhaps one company will step in and provide the answer - then again, perhaps no one company can. Either way, eventually attention will shift from technology to content, where it belongs. We need the technology to get ideas from point A to point B, but if we don't have ideas, it doesn't matter how efficient the technology is.

#### An Up & A Down

What's VRML good for? The standard list of possibilities includes architects posting VRML versions of their work for clients in another city to walk through; stadium, theater, and arena owners using VRML venues to sell tickets; interlocking VRML models to aid in online sales of

precision-crafted parts. So far, only a handful of companies have actually implemented this type of application, but many are working on it.

By far, the most intriguing aspect of VRML remains potential applications that haven't yet been imagined. Visions of the VRML future abound, but predicting the best uses of such a flexible and penetrating technology is tricky at best. These days, even hardcore evangelists don't gaze too deeply into their crystal balls. No precedent exists for 3D immersive communication as a medium. Common sense doesn't necessarily apply.

For instance, the people at OZ report that users requested chairs, tables, and couches in their virtual nightclub. Adding the furniture wasn't difficult, but giving the avatars the ability to sit down was. The natural question, of course, is why an avatar needs a place to sit -- they don't get tired standing around, and they don't need to set their drink down to

step out on the dance floor. Nonetheless, users perceived a need for seating.

"You don't even need floors, really," according to Kjartan Emilsson, "but people are comfortable with these things. They want to think there's an up and a down. You don't need gravity in VR. I've seen a world that's like a city floating in space. You enter flying. VR begins to get interesting when you abandon traditional ways of thinking."

That isn't to say there aren't "traditional" uses for VRML. According to Ben Delaney, president/partner of the CyberEdge consulting firm, "VRML is doing well in areas that have already seen the benefits of 3D and traditional VR-simulation, training, architectural walkthroughs, and the like. These areas will be the first to embrace VRML and the first to profit from it. 3D chat worlds, VR gaming, and other uses on the Web will come, but it may be a while before people start making money there. VRML has great potential for advertising too, when someone thinks of a compelling way to do it."

Everyone seems to agree that 3D advertising has a lot of potential. Imagine seeing not just a banner or billboard, but an entire world devoted to a product. Now, instead of quickly scanning and then clicking to the next

**link**, potential **buyers** enter the ad, perhaps for minutes on end. A real-world analog is the Pepsi pavilion at the World's Fair, but the building can be any size, construction and maintenance cost very little, and the real estate is much cheaper. A number of companies are actively developing such applications, but it's too early to gauge how effective they might be.

No matter who you talk to about VRML, just about everyone agrees that it will have a tremendous impact on the Web and on the way that we think about it. It probably won't look like the cyberspace vision of sci-fi writers. It might be much more exciting.

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**The Internet as a marketing tool**

**Abstract:**

The Internet may have more potential as a marketing tool than any of its media predecessors, including the television. This study examines the moderating impact of the Internet on consumer behavior, using the classical problem solving approach to the buying decision (problem recognition, information search, evaluation of alternatives, purchase decision, and post-purchase behavior) as the foundation.

## **Text:**

### **Headnote:**

The Internet may have more potential as a marketing tool than any of its media predecessors, including the television. We examined the literature and "surfing" the Internet to examine the moderating impact of the Internet on consumer behavior. Using the classical problem solving approach to the buying decision (problem recognition, information search, evaluation of alternatives, purchase decision, and post-purchase behavior) as the foundation for our discussion, we explored how the Internet might influence buyer behavior.

### **INTRODUCTION**

The Internet offers benefits that can help consumers be more efficient and effective as they search out, evaluate, purchase and use products (Duglin, 1996; Janal, 1996; Slofstra, 1996). Consumer efficiency can be enhanced by the Internet's potential to provide rapid access to product related information, saving consumers time, effort and money. Consumer effectiveness can be increased through the Internet's capacity to deliver information in forms that enhance learning (combining voice, image, text, video), thereby helping consumers to select products that best meet their needs.

The increased popularity of the Internet has not gone unnoticed by marketers. Some are beginning to utilize the Internet in their marketing efforts. As the Internet user population expands, the Internet will become a more salient marketing tool for many different products. We believe that cybermarketing (any form of Internet based marketing) will be critical to the success of many companies in the 21<sup>st</sup> century as they search for ways to gain, sustain or combat competitive advantage. Because the Internet is a relatively new tool for marketers, our understanding of its impact on buyer behavior is incomplete. The purpose of this conceptual paper is explore the Internet's potential as a marketing tool, primarily, but not exclusively for promotional activities. More specifically, through the use of examples and the classical decision-making model, we examine the Internet's potential to influence consumer behavior. We pose many more questions than we answer, yet that is our intent. We hope to encourage academicians and practitioners to examine these questions and others in order to expand knowledge of the Internet's potential as a marketing tool.

## THE INTERNET

The Internet is an information infrastructure comprised of thousands of computers connected by thousands of paths--a global "network of networks," a Metanetwork (Carr & Snyder, 1997, p. 368). More specifically the Internet is a loosely configured web of corporate, educational and research computer networks around the world (Tetzeli, 1992). The Internet supports local, regional, national, and international communications and uses as varied as its constituents.

By all measures, the Internet is growing rapidly. A recent study of Internet hosts showed a growth rate of 70% per year (Rutkowski, 1997). A host is the equivalent of a network node and a single host can support one or many users. Each host must have a domain name registered with the Network Information Center (the NIC provides a database of registered Internet nodes) of the host's country. Measurement of the growth in number of Internet hosts is accomplished by electronically counting entries in the Domain Name System (DNS) over a specific time frame (Lottor, 1992). Statistics can then be produced for each country domain counted. Growth statistics for 1996 show domain growth rates of 5,717% in Sri Lanka, 820% in China, 308% in Indonesia, 284% in Brazil, 250% in the Russian Federation, 173% in Egypt and Japan, 151% in the U.S.A., 110% in Mexico and 104% in Italy (Rutkowski, 1997).

The actual number of Internet users is far more difficult to measure than the number of Internet nodes (DNS growth) since users come and go at a far more rapid pace than Internet nodes. As a consequence, projecting growth in the user population is more challenging and estimates of user growth vary. One study projects a user population of 117 million worldwide by the year 2000 (Bankston, 1996), another projects 250 million (Killen, 1996), and a third projects 300 million in the same time frame (The Statistics, 1995).

The Internet was at one time difficult to negotiate (Tetzeli, 1992). Today, because of the World Wide Web, or just the Web, the Internet is much more user friendly. The Web is a graphical user interface (GUI) that supports user interaction with various Internet components. The Marketing Manager's Plain English Internet Glossary defines the Web as "The Internet with pictures" (1996). The Web can actually be considered a subset of the Internet as can Gopher, Archie, Veronica (for finding and retrieving information), FTP (for uploading and downloading files), Telnet (supports limited access to remote computers) and E-mail (for sending and receiving electronic messages). The Web differs from the other components in that it makes them, the other components, easier to use because it is a very intuitive "point and click" interface.

Web support of business activities is a rapidly growing phenomenon. At present the Web makes it possible for a consumer to shop at an online grocery store, load up the grocery cart, check out without waiting, and authorize delivery to his/her residence (Bankston, 1996). Web use is particularly noteworthy in the financial community. Credit unions now use the Web to make interest rates available 24 hours a day, support online

user computations to conduct "what if" analysis, and allow users to fill out and submit loan applications online (Janal, 1996). Consumers interested in purchasing real estate can have access to similar services at banks, credit unions, or other financial institutions, and in addition, potential real estate buyers can view pictures of real estate, download maps, and even arrange appointments to view properties of interest (Bosco, 1996). The Web's potential to support business activities seems ;almost limitless.

The Web is the fastest growing Internet phenomenon. Bankston (1996) reported that the Web was doubling in size every 4 to 6 months and Lottor (1997) estimated the annual growth rate (measured in number of Web sites--hosts named WWW) to be 439%. Because of its rapid growth and ease of use, the Web is of particular importance to marketers. Our discussion of the Internet presupposes use of the graphical user interface.

#### THE INTERNET'S POTENTIAL IMPACT ON THE BUYING DECISION

With a rapidly growing dynamic and diverse set of consumers going online

worldwide, the ]Internet harbors great domestic and global marketing potential for opportunistic marketers. We see the Internet as a potentially powerful force for influencing consumer buying behavior. Furthermore, we believe that the Internet's potential in this important area is at present, only partially realized, largely because there is much to learn. A thorough examination of how the Internet can influence buying behavior is needed.

While the Internet's potential as a marketing tool could be examined in the context of many buyer behavior paradigms (e.g., experiential and behavioral influence approaches), we chose to focus on the more generic classical decision-making process. There are two reasons for our choice. First, we believe the Internet is a more salient marketing tool for situations where consumers are more reliant on information processing (as opposed to emotional or behavioral processes) to evaluate products. Second, the classical model is applicable across cultures (Doran, 1994) and to organizational and individual consumers (Olshavsky and Granbois, 1979). The classical buyer decision-making process consists of five stages, problem recognition, information search, evaluation of alternatives, purchase decision, and post-purchase behavior (Engel, Kollat, and Blackwell 1973; Howard and Sheth 1972; Nicosia 1982). This model is presented in Figure 1. The following pages offer a brief overview of the model and provide examples illustrating how the Internet can affect each stage. From our examination of the stages, we identify what we believe are important questions to be addressed by marketing practitioners and researchers. We conclude with implications for practitioners and raise some strategic issues regarding cybermarketing.

#### Stage I: Problem Recognition

Problem recognition occurs when a consumer senses a disparity between his or her actual state and his or her desired state (Bruner, 1987). Problem recognition can be activated when a consumer is exposed to an external

stimuli, such as the smell of food, which activates a need, such as hunger. In this case, the presence of an external stimuli caused the consumer to become aware of an unmet need. Aware of this need, the consumer becomes more desiring of products that may satisfy the need.

Internet users often "surf" the Internet looking for information about specific areas of interest. To accomplish this, users typically use search engines and key in specific words (called keywords) or phrases (called search arguments) they think might lead them to information of interest. In the process of searching for "interesting" information, a user may encounter certain stimuli that activate or create a need.

Example: Mrs. X is an Internet user that happens to be very health conscious. As she searches the Internet (probably with a Web browser) to become more knowledgeable about health related issues, she happens upon a list of articles that discuss dietary issues. Her attention focuses on an article about the dietary short-comings of most Americans. She clicks on the article's title (a hyperlink to the page containing the article), reads it, and forms the perception that her diet lacks certain vitamins and minerals. The discrepancy between her perceived state (the health that she enjoys with her current diet) and her desired state (the health that she perceives could be attained with an improved diet) may activate a felt need that is strong enough for her to seek solutions to the problem.

From a promotional perspective, the marketers for dietary supplements should attempt to ensure that an Internet search for information about dietary supplements will lead to useful and favorable information about their company's products. Ideally, the search would lead the consumer to the company's Web page (possibly at a company Web site) where the consumer can find relevant information about company products. Promotional information available from a Web page could help create interest in any or all products offered by the company.

To create a favorable impression of the company's offerings, the information encountered by the consumer should create awareness and interest. Hit list position can be an important factor in creating awareness and interest. A hit list is the list of relevant sites, or web pages, that contain the words that the user employed in the information search. The order of appearance on a hit list (the list of pages or sites that result from a search) is important, having much the same impact as shelf position in a grocery store. The more favorable the position on the hit list, the greater the likelihood of attracting the consumer's attention. Hit list position is influenced by the words included in the site name, header and word use on the Web page itself--these things can be, to a large extent, controlled by a company. Achieving favorable placement (near the top of the index or list) with various, search engines can be critical to marketers' efforts to lead consumers to their company's Web page as opposed to those of competitors, yet that favorable placement may be quite costly.

More research is needed to better understand how the Internet can be used effectively as a promotional tool to stimulate problem recognition. Questions that need to be addressed by marketing practitioners and

researchers include:

How do Internet users (customers or potential customers) search for information? How much time and effort will they devote to a search?  
(Chart Omitted)

Captioned as: FIGURE 1

How can hit list position be influenced?

In what way can the hit list influence problem recognition? What key words are associated with a product or product use? How might those words be incorporated into domain names, headers, and the Web page itself?

## Stage II: Information Search

Aware of an unmet need, the consumer is motivated to gather information concerning a way to satisfy the need. Information gathering helps consumers become aware of competing brands or products and their features. If the consumer has low involvement with the products that can satisfy the perceived need, little effort will be exerted in the information search. For example, the consumer may process information through peripheral routes, relying more heavily on cues as opposed to detailed and elaborate product specific information (Cacioppo, Petty, and Kao 1986). Over the Internet, marketers can utilize a wide assortment of cues such as colors, images, and sounds to attract and influence consumers.

With high involvement, the consumer is likely to conduct a more active information search. In a state of high involvement, the consumer may be more willing to seek out detailed information from private or public sources well as opportunities to acquire information through product trial experiences (Beatty and Smith, 1987). The consumer might be inclined to seek ways to open a dialogue and interact directly with marketers. With proper use of hyperlinks, marketers can use the Internet to provide an abundance of relevant product information from a variety of private, commercial, or public sources.

Example: Ms. Y is a pet owner. She has logged onto the Internet to look for information about her new pet, a rare breed of dog. In visiting various sites she discovers a link to a breeders directory. Various graphic images of healthy happy puppies in picturesque settings may serve as cues that elicit favorable emotions of love and warmth. Ms. Y's interest is sparked and she becomes attentive to ads that offer dogs for sale. She browses through the ads all the time expanding her awareness set, the set of competing products familiar to her (Narayana and Markin, 1975). Although she had not logged on with the intention of "dog shopping," she discovers that the breed of dog she owns is very popular and commands a high price.

Ms. Y "bookmarks" the site (saves the site address for future use) and logs off.



After reflecting on her findings, Ms. Y becomes interested in acquiring a mate for her pet in order to become a breeder of registered dogs. Ms. Y logs on a few days later, and selects the bookmark (Microsoft calls it a "favorite") to revisit the site. This time Ms. Y more carefully examines the ads of various breeders. This is IS an active information search in which she narrows the choice of breeders to those offering AKC registered dogs (same credentials as her own pet) with an impressive pedigree. This smaller set of alternatives is her consideration set (Narayana and Markin, 1975). Ms. Y examines photographs of dogs found on various breeders' Web pages. Ms. Y uses E-mail to chat with references posted on the breeders' Web pages. Finally, Ms. Y visits the home page of the breeders' "Show Club" to examine a posting of show results for the past few years. Ms. Y has now narrowed down her choices to a small set of breeders that represent her choice set.

Effective Internet advertisements for reaching consumers at lower levels of arousal might include banners (short catchy graphics on a Web page), or unique pictures and sounds, to draw attention to a simple emotional message. For more involved consumers,

**hyperlinks** to detailed product specifications, **pictures**, testimonials, and E-mail addresses of satisfied users can be provided through the company Web page. It is important, also, to establish numerous electronic paths (Web page address, E-mail address, through key word searches) that will help consumers acquire information about one's company and its products. More research is needed to identify ways the Internet can impact consumer product information search activities. Other Internet promotional considerations that warrant the attention of marketing practitioners and researchers are as follows:

How can the Internet be used to move potential consumers from a low level of arousal to a more heightened sense of arousal that might encourage them to actively search for a product to meet a felt need?

Where on the Internet might potential consumers look for information about

alternatives for satisfying a felt need? Will potential consumers use a Internet based information service that allows them to look up a company thought to provide the product? Will they use a search engine and search by prod[uct name (gun), brand (Remington), product function (shooting), or perhaps by the process for which the product is intended (hunting)?

To what extent do Internet users rely on addresses found in other sources (on a product package, in a magazine or television ad, etc.) to find company or product information on the Web?

### Stage III: Evaluation of Alternatives

The information search results in the identification of a set of alternative products that will reduce or eliminate a felt need (Howard and

Sheth, 1972). Here the consumer attempts to identify product features/characteristics to determine the likely consequences of purchasing from the considered set of alternative products (Phillips, Olson, and Baumgartner, 1995). Using available internal, from memory, and external information, the consumer may process information by attributes or by products to develop a set of beliefs, or "product image," about a product with regard to its ability to deliver the desired benefits (Bettman, 1979; Jacoby, 1975).

Consumers may use a number of different decision heuristics (rules of thumb) to evaluate alternative products. These heuristics include the compensatory rule, the lexicographic rule, the conjunctive rule (Srinivasan, 1987; Wright, 1972). With the compensatory rule, the consumer determines the importance of a set of attributes and then rates each considered product across the set of attributes in an attempt to identify the product with the highest weighted performance rating. The lexicographic rule is used when the consumer is looking for the product that rates the best on attributes the consumer perceives as the most important (when two or more products tie on the most important attribute, the products are rated on the next most important attribute, etc.). A consumer who is worried about making a bad product choice may use the conjunctive rule to eliminate a number of products from the choice set by avoiding products that rate poorly on a given attribute. Often, consumers use various combinations of the above rules while evaluating products.

Regardless of the decision rule(s) used, the nature of information available on the Internet can bias a consumer's choice in favor of a particular product. As with other media sources, Internet ads can be designed to provide general information about the product, change beliefs about the product or competitors' products, alter consumers' perceptions of the importance of specific product attributes, or heighten awareness about the neglected attributes of a product (Boyd, Ray and Strong, 1972).

Example: Mr. Z has an interest in a new automobile. Conducting a search on the Internet, he enters the name of one of several models that make up his choice set. Among the many sites that might provide information of interest, Mr. Z elects to explore a site called Autotown (<http://autotown.com>). He finds what might be described as a virtual town with a Used Car Cinema, Auto Quote, a New Car Cafe', Auto Town Times, an Auto Parts Store and the Auto Town Bank. Using the conjunctive rule, Mr. Z wants to eliminate, from his consideration set, the automobiles that are priced beyond his budget. By accessing Auto Quote, Mr. Z can get a free quote on the automobiles in his consideration set. Several automobiles are priced within his range, so Mr. Z wants additional product information about these automobiles. He accesses the New Car Cafe' which allows him to link up with dealers in his area or to link directly to the manufacturer. He then collects more detailed information about the automobiles in a form that is most desirable by him (e.g., by attributes or by products). Feeling that the information provided by the dealers and manufacturers might be biased, Mr. Z visits the Auto Town Times to access articles from numerous automotive magazines where he can access still more information about the vehicle(s) of interest. Carefully, without the pressure of a salesperson,

he uses the compensatory rule to select the automobile that he perceives will best serve his needs.

A challenge for marketers is assuring that Internet searches lead to favorable information that will encourage the purchase of their company's product(s). Hyperlinks that lead to sources of favorable information about the company's product(s) can create in the consumer a favorable bias toward the company's product, thereby encouraging a purchase. It is important, therefore, that marketers entice consumers to visit their company's Web page because from the company's own Web page, marketers can better influence the information that the consumer will encounter directly (information available on the page) or indirectly (hyperlinks to other Web pages or Web sites).

There is a downside risk associated with providing hyperlinks to other Web pages or Web sites. Once a consumer leaves the company's Web page, he or she might not return. Care should be taken not to lead consumers to destinations and information that are not relevant to the purchase decision or encourage the purchase of competing products. Research is needed to examine how the Internet can be used to influence product evaluation processes. Relevant questions to be addressed are as follows:

In what form might information provided via the Internet be most effective? (text, images, video, audio, etc.) What types of relationships (reciprocal agreements, compensation for links provided, etc.) might be established with the owners of other Web sites, or pages, in order to get them to provide attractive hyperlinks to one's company Web site or Web page?

Does the Internet diminish salesperson influence on consumer product evaluation processes?

Is the Web's format for presenting information more conducive to a certain, or a set of, decision heuristic(s)? That is, will consumers be more likely to use a particular heuristic or set of heuristics when evaluating products via the Internet?

#### Stage IV: Purchase Decision

After evaluating alternatives, consumers typically form product preferences and perhaps the intention to purchase what they perceive to be the most desirable product. Several sub-decisions may be involved in the purchase including brand choice, vendor selection, quantity to purchase, timing of purchase, payment method, etc.

The purchase decision can be influenced by a number of factors, not the least of which is perceived risk (Hawes and Lumpkin, 1986). Consumer risk can result from a fear that a product may not perform as desired. This risk may reduce the likelihood that the consumer will purchase the product (Roselius, 1971). To reduce consumers' perceived risk marketers can provide historical performance data, via the Internet, about what a product can do and how best to use the product. Positive information about the product should give consumers greater confidence in their purchase decisions.

Example: For this example we return to the case of Mr. Z searching for a new vehicle. On the Web, Mr. Z could find information to assist in each of the subdecisions involved in the purchase of the automobile. Information found at "Autotown" or through the use of other links could assist him in brand choice, vendor selection, timing and payment method (quantity--1--would likely not be an issue in this instance). To support brand and vendor selection, the New Car Cafe allows Mr. Z to identify local dealers, the products they offer, and evaluate their service ratings. Facilitated through manufacturer and retailer Web pages, Mr. Z "chats" online with consumers about their experiences with the various brands in his choice set. The information received reduces the perceived risk of purchasing the desired automobile. With regard to purchase timing, the information found in magazine articles, located through the New Car Cinema, provides Mr. Z with tips on when dealers might be inclined to lower prices to stimulate sales for existing models, thereby making room for the new models. The Auto Town Bank can help Mr. Z to make financial arrangements for the purchase. Auto Town Bank might provide information on projected changes in interest rates that could be an important influence on the timing of a new vehicle purchase. The Auto Town Bank might also assist in the choice of payment method (probably financing alternatives in this case). In the near future Mr. Z will be able to purchase his vehicle over the Internet--maybe directly from the manufacturer.

As demonstrated in the preceding example, a consumer can get help from the Internet in making purchase subdecisions. A site like Autotown could be used as a model for construction of a company web site designed to encourage consumers to purchase the company's products. Marketers could make relevant information readily available on or through (with hyperlinks) Web pages. Web pages would provide hyperlinks to sites that provide information (information that is positive) from sources that consumers perceive to be objective (consumer groups, independent laboratories, government agencies, etc.). Because consumers often rely on information obtained by "word of mouth" in reducing risk (Arndt, 1967), some consideration might be given to supporting E-mail inquiries by potential consumers to satisfied consumers (with their permission, of course). In some cases, the Internet offers consumers an opportunity to try products, thereby experiencing a product's benefits prior to purchase. For example, many software companies provide trial versions of their products, some of which can be downloaded from the Internet. Allowing consumers to try the products before they buy lowers the risk associated with product uncertainty (Hutheasing, 1996).

### **Virtual reality** technology

will eventually allow consumers to experience many types of products

online. Obviously, the promotional impact of the Internet in purchase decisions needs additional study. Among the issues that need to be addressed are the following:

How can the Internet support purchase sub-decisions and predispose consumers to purchase a company's products?

How can the Internet be used to reduce the perceived risk associated with the purchase of a company's product? Is it possible to increase the risk of purchasing competitors' products (ethically, of course)?

#### Stage V: Post-purchase Behavior

Consumer behavior extends beyond the purchase of a product. Subsequent to the purchase of a product, consumers experience some level of satisfaction or dissatisfaction. Marketers strive to satisfy consumers to enhance their relationship with the consumer (Spreng, MacKenzie, and Olshavsky, 1996).

Satisfaction is a function of the extent to which the buyer's perception of the product's performance meets the buyer's product expectations (La Barbera and Mazursky, 1983). Consumer expectations are largely the result of messages received from sellers, friends, and other information sources or from previous experience. When product performance meets or exceeds expectations, consumers will be satisfied, and thus, more likely to buy the product again and/or, speak favorably about the product to others (Cadotte, Woodruff, and Jenkins, 1987). Because consumers tend to regard information obtained by "word of mouth" as more objective and possibly more accurate (Taylor, 1974), consumer comments (favorable or unfavorable) can be a powerful influence on the purchase decisions of others.

Marketing efforts after the sale can influence post-purchase behavior and consumer satisfaction (Donnelly and Ivancevich, 1970). These marketing efforts, to a large extent, involve communications between marketers and consumers. Because the Internet can support broadcast, or one-on-one communications, it can be a useful vehicle for increasing consumers' post-purchase satisfaction.

Example: Ms. W purchased a tax package that would allow her to do her federal and state taxes on her personal computer. Prior to installing the software she carefully read the instructions for installation. She successfully installed the software and had no difficulty doing her taxes due to the "user friendliness" of the software. When she attempted to print her completed forms, she ran into a problem. Each time she tried to print the forms she failed. She consulted the users manual but could find no solution to the problem.

In exploring the users manual Ms. W found a toll free number for customer service and called the number. She was introduced to the automated call handling system and waited for 10 minutes without getting to speak with the "next available customer service representative." Angrily, she gave up on the call and began to question the decision she made to purchase the software. Going back to her manual, she discovered that the makers of the product had a Web site. She visited the company Web page and clicked on the Customer Service button. She discovered as she visited the Customer Service page that she could send an E-mail message describing her problem. She did so and before the end of the day she received an E-mail response detailing

a number of possibilities for her to examine. The problem was identified and the recommended solution implemented. It worked!

Ms. W revisited the company Web page again out of curiosity and discovered that the customer service page provided an option button (hypertext link) that took her to a list of common problems indexed by problem category. She discovered, also, a button that would allow her to view helpful tips from other more experienced product users. Ms. W found that she could post a question on the company sponsored electronic bulletin board and other users could respond to her question, or that she could converse with other users directly by E-mail. All of these capabilities were made accessible through the company's Web page. Ms. W is now a much more confident and satisfied customer and much more likely to recommend the tax package software to her friends.

Consumers may continue to seek and evaluate information about products they have purchased, especially for high involvement products such as an automobiles (Donnelly and Ivancevich, 1970; Ehrlich, Guttman Schon:ack and Mills, 1957). Seeking supportive information after a purchase decision is one means by which consumers reduce postpurchase dissonance (Adams, 1961). Consumers having second thoughts about the purchase of an automobile will sometimes continue to read advertisements about the product purchased in search of support for the choice made. Here, the Internet could serve as a two-edged sword. While consumers might use the Internet to acquire information that supports their purchase decisions, they might also encounter disconfirmatory information. The marketer's task would be to encourage consumers to visit the company Web page where the company could provide hyperlinks to favorable information in magazines, consumer reports, etc. Testimonials of other consumers might also be useful. Marketers would have the opportunity to screen and selectively provide information to recent buyers--information that would support the choice made, thus maintaining or increasing post-purchase satisfaction.

The Internet offers a quick, efficient, and relatively inexpensive means of getting feedback from consumers. Consumers could be encouraged to provide feedback on product performance via E-mail or from a comment section on a Web page. Marketers might then use that feedback to gauge customer satisfaction or dissatisfaction and to identify appropriate corrective action where necessary.

Creative marketers might consider using the Internet to solicit ideas about product use. Consumers could be encouraged to E-mail ideas for product use or submit them from the comments section of the Web page. Marketers could survey consumers electronically or conduct online focus group interviews to get information on product use as well as product disposal. With this information, marketers might be able to identify ways to gain competitive advantage through product improvements or new product development.

The Internet could be a powerful vehicle for receiving and disseminating information to help marketers make product decisions and to improve consumer satisfaction. This in turn should enhance relationship marketing. Important questions to be answered about the Internet's potential influence on post-purchase processes include:

How can a company use the Internet to maintain/increase post-purchase satisfaction?

What are the benefits of conducting Internet based research to get more immediate feedback about consumers' post-purchase product satisfaction and/or product use and disposal?

What are the benefits of conducting focus group interviews via the Internet to examine post-purchase issues?

What is the potential for Internet users to experience increased/decreased post-purchase dissonance?

How can Internet based approaches to influencing postpurchase satisfaction be assessed?

#### IMPLICATIONS FOR PRACTITIONERS

The Internet combines many of the most salient features of television, radio, magazine, newspaper, telephone and mail. Through its graphical user interface (the Web), the Internet supports mass broadcast and one-on-one communications in the form of text, images, audio and video. Advertising, personal selling, publicity, and promotional activities are all possible with the Internet. Not only can the Internet be used throughout the promotional mix, it may change the effectiveness of promotional activities. For example, the social dynamics involved in the relationships between sales personnel and consumers might be different on the Internet. A person with an extrovert personality may no longer have an advantage in generating sales, and cyberselling may create a more level playing field for sales personnel by negating the impact of the sales person's sex, ethnicity, and physical characteristics (e.g., appearance, strength, stamina, physical handicaps). Given comparable knowledge about products and companies, salespeople may gain their greatest advantage from knowledge of the Internet.

Although the complete Internet ramifications for the promotional mix are not known, it seems clear that the Internet has great potential as a promotional tool. Important Internet capabilities related to promotion are as follows:

the Internet can be used to disseminate information about products or promotions;

the Internet can be used to activate individual purchase decision triggers and generate sales or traffic to local retailers, much like point-of-purchase displays;

the Internet can possibly increase the interaction between sales personnel and consumers. This may help the sales person make the sale and help the consumer get a product well suited to his or her needs.

Marketers can use **hyperlinks** to **link shoppers** with favorable publicity that might be available from independent Web sites.

As a marketing tool, the Internet is not limited to promotional activities. We believe that it can be a useful, timely, and cost effective tool for certain types of marketing research. For instance, the Internet can be used to monitor competition (legally, of course). No one owns the Internet, so if the competition is conducting marketing activities online, it is possible to examine their actions quite closely and formulate an appropriate response.

Development of a sound marketing mix requires extensive consumer research to gain knowledge about the target markets' needs, values, attitudes, etc.. To conduct consumer research, marketers could compile E-mail addresses for current or prospective Internet consumers.. Electronically mailed surveys could then be administered to targeted consumers at a low cost across wide geographic areas (much like direct mail surveys). As with telephone interviews, Email surveys allow for administrative feedback to respondents

and fast collection of data. Internet browsing intercept tactics might be developed to achieve much the same results as a mall intercept. Listed below are some issues that need to be examined regarding the use of the Internet as a consumer research tool:

cost effectiveness of conducting Internet surveys as compared to the traditional modes of consumer research (e.g., telephone, mail, personal interviews);

implementation of controls to ensure that the appropriate audience is surveyed;

response rates for Internet based consumer research compared with response rates for traditional modes of consumer research;

validity of the responses to surveys conducted over the Internet;

security issues for respondents and researchers.

There are strategic issues to be addressed by marketers. Marketing managers must determine what, if any, role the Internet will play in marketing strategy., More broadly, corporate executives must examine how the Internet might impact corporate strategy.

We recommend that managers examine the Internet's strategic impact from two perspectives. First, in a proactive mode, a company should examine how it might use the Internet to gain or sustain competitive advantage. Second, in a reactive mode, the company should consider how it might respond to competitors' efforts to use the Internet as a strategic weapon.

According to Porter and Millar (1985) competitive advantage is gained by creating value, as perceived by the customer, at a lower cost than its competitors (a low cost strategy), creating products that are more valuable than competitors (a differentiation strategy), or some combination of the two. Two important "primary" value adding activities include: 1) efficient



marketing and delivery of products to buyers, and 2) support and service after the sale. Furthermore, because marketing costs can add substantially to the price paid by consumers, more efficient marketing facilitated by the Internet, might assist in achieving a cost advantage.

A word of caution is warranted. Because no one owns the Internet, it may be difficult to keep the competition from observing ones actions. Competitors may imitate many of a company's web page features without violating copyrights or patents. Achieving a sustainable competitive advantage with the Internet poses a real challenge. Any such effort would require an organizational commitment to provide the resources, human and otherwise, necessary to stay ahead of the competition.

A particularly important strategy issue related to Internet marketing concerns market segmentation. The Internet may be more suited for marketing certain types of products based upon the needs and lifestyles of the consumers. Appropriate Internet use in marketing may be determined by consumer segments that differ in values and behaviors. Some consumers may be comfortable gathering information over the Internet, yet be leery of making purchases over the Internet. For this segment the Internet may serve more as a advertising medium. Other consumers may desire the convenience of shopping and making purchases over the Internet. For this group, the Internet might be used as a promotional point-of-purchase display to generate impulse sales. Consumers that are frequent Internet users may enjoy an ongoing dialog with the selling organization. For this segment, the Internet might be used primarily as device to enhance personal selling. With the growth and diversity of consumers going online, market studies are needed to describe market segments. The Internet might be used to identify prospects who are predisposed to buy as a result of their interactive online relationships. While these illustrations provide only a cursory discussion of possible Internet market segments, they draw attention to the need for research examining consumer characteristics such as buying behaviors, lifestyles, and Internet exposure and use to identify specific Internet market segments.

#### INTERNET LIMITATIONS

While there are many advantages to cybermarketing, there are some noteworthy Internet limitations. First, not everyone has access to the Internet and some who do are not comfortable with it. This was once the case with radio and television, but over time the technology spread, people became more accepting and audiences grew. This is already occurring, the Internet user population is growing at a phenomenal rate.

A second major Internet limitation would be the frustration that many users feel over slow response times. Speedier modems and emerging alternative delivery systems are improving the speed of Internet communications and should lessen the importance of this limitation.

A third limitation concerns legal issues. It seem that legislators are just starting to ponder legislation to control the Internet. No doubt their efforts will continue. Some legislation is needed to protect marketers, but

legislation might also stifle marketing activities. Given that the Internet is global, the complexity of legal issues related to Internet use is certain to increase.

#### FUTURE RESEARCH

There are broad research questions that may provide the context for answering many of the more detailed questions articulated in this manuscript. Researchers should design studies to answer the following questions.

How and to what extent do consumers use the Web in making buying decisions?

What part will the Web play in relationship marketing?

How can marketers make the very best use of the Internet as an emerging marketing tool?

What are the determinants of the success for marketing on the Internet; what are the critical success factors?

When should the Internet be the dominant marketing and/or promotional tool for a company?

Internet marketing, or cybermarketing as it is called, is an important area for future research. Answers to these questions, and others, should improve our understanding of the Internet as a marketing tool, provide a framework for theory development, and benefit practitioners.

#### CONCLUSION

Some view the Internet as simply a place to post an ad, but we believe it is much more. We believe that the Internet has the potential to dramatically change the marketing of products. The importance of the Internet to marketing is increasing and marketing practitioners should prepare themselves and their companies to take advantage of Internet capabilities. Cybermarketing will continue to grow in importance and have a greater impact on consumer behavior. As the number of Internet users grows, it will become increasingly important for marketers to use this tool effectively. To better realize the benefits of the Internet, systematic research examining its impact on marketing and buyer activities is needed. This is an area rich in research potential which could produce high payoffs for practitioners. Issues and questions raised throughout this paper should lead to interesting and meaningful research.

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**Total cost management in the Internet age**

### **Abstract:**

The explosion of Internet technology has many in the construction industry asking how to turn this information overload into accessible, usable knowledge. Through the use of digital communications, the construction industry is realizing the benefit of this convenient and cost-effective tool for gathering, filtering, and managing project information. Internet technologies are allowing global project team to communicate, cooperate, and collaborate in an effective manner. This first phase of Internet

application allows one to start communicating information by automating traditional communication methods, but, it also brings new opportunities.

## **Text:**

The explosion of Internet technology has many in the construction industry asking how to turn this information overload into accessible, usable knowledge. Through the use of digital communications, the construction industry is realizing the benefit of this convenient and cost-effective tool for gathering, filtering, and managing project information. Internet technologies are allowing global project teams to communicate, cooperate, and collaborate in an effective manner. This first phase of Internet application allows us to start communicating information by automating traditional communication methods, but, it also brings us new opportunities as we begin to explore what this new media can do for us.

## STRATEGIC INFORMATION TECHNOLOGY (IT)

### Why the Internet?

With so much hype and misinformation concerning the Internet in the media today, it is no wonder that many of us in the architecture/engineering/construction (AEC) industry do not understand what this powerful information resource and communications tool can do for us. Finding the correct balance to use this rich information resource while maintaining the core competence of how each of us produces and fits into a project will lead our use of the Internet as an integral part of each of our businesses.

### Computer-Aided Business

We began a technology train ride by asking computers to automate manual tasks. We began to use computers to write letters, compose specifications, electronically draft through computer assisted drafting (CAD), and numerous other tasks that we used to do manually. This period of technology expansion has been known as computer-aided business. While a necessary first period of evolution, the computeraided business model has limitations. During this period, individuals create digital information available to only themselves on individual computers. This has lead to "islands of automation" within our business environment. We are creating digital information by using our computers as electronic pencils, thus not exploiting the power of this information.

### Computer-Integrated Business

The next evolutionary step in our techno-train journey can be called connections. We bring our "islands of automation" together by allowing computers to communicate with each other through computer networks. By connecting our different computer hardware, different software programs, and different locations, we pull together a collective knowledge that we

could not have had using traditional methods. We are seeing computer integration in the computer networks we are building in our offices. We are using graphic user interfaces (GUI, pronounced "goo-ee") in the form of Microsoft's Windows operating systems or Macintosh OS to connect our different software programs, and we are beginning to see computer integration's infinite power and value by connecting different locations through the Internet. As we, and the technology, mature through time, we ask the technology to perform tasks that cannot be accomplished manually. Technology brings with it new ideas and thoughts on how we can perform our tasks more productively and efficiently. As we become more comfortable with technology, we allow it to integrate into our businesses. We begin to use the potential of technology beyond traditional methods. This period of growth is known as computer-integrated business. No longer are we held captive to traditional manual solutions to problems within our business. We begin to expect that the technology will provide a solution.

### Information-Based Business

The final phase of the techno-train journey is when technology becomes transparent to the business. During this period, it's no longer a strategic competitive advantage to have the latest and greatest computer hardware and software. It's expected as a natural fact. The use of technology and information during this phase becomes as transparent and factual as the four walls that define the office. This final goal is known as the information-based business. The simplification of hardware, software, and connectivity brings to you and your business the true power of information technology in a cost and time-effective way. Applied technologies such as Intranets and extranets are the forerunners of this concept. Web-enabled construction documents are an outgrowth of this concept. The implications of "live" specifications and drawings by linking information in your computer, on your network, and on the Internet are already being used by firms worldwide.

### PROJECT INFORMATION ONLINE/EXTRANETS

Emerging and converging technologies, like Internet technologies, are only as useful as they are applied and used in an efficient manner. Through systemic strategic planning, these technologies are being implemented in the field through remote communications. Until now, it was not cost effective to set up the project site with the equipment needed to apply these technologies. With the advent of Internet tools and methods such as intranets, extranets, and virtual private networks (VPN), these processes

are affordable and become indispensable tools when implemented. The need for improved remote communications is based on the fact that the time

available both to consider and make decisions about construction information and to deliver construction services is collapsing. The result is a dramatic increase in the need for information that design/construct professionals can rapidly access to make the right decisions in compressed



time frames. The immediate need is to set the infrastructure for information distribution and communication to the field. This is done through the implementation of a virtual private network by a virtual team (see figure 1 ).

#### How Virtual Teams Work Online

In order to access project information, each project member is given a project number generated from a database that allows the person to access only the files pertaining to his or her project. Using a project intranet, team members can access project construction documents, both text-based and graphic information, review comments from other team members, collaborate on making design and construction decisions, etc.

Internet technology allows a business to go out and get the best people for a particular project, anywhere in the world.

A problem that runs deep in our industry is striking the right staffing balance. No design professional can afford to keep enough people with the expertise required for every possible job that could come through the door. The range of expertise is too diverse to be able to keep a professional from every discipline on staff. Web technology presents an innovative solution to the staffing situation. Through a business intranet/extranet, you create an environment for professionals to come together to achieve a specific purpose for a specific time period, like designing and constructing a building.

For all intents and purposes, your intranet should be the Internet. Team members access either your company's or the project's Internet home page with a web browser and Internet connection from anywhere they happen to be. The team member enters their user name and password, which gives access to the secure project team area via a CGI (common gateway interface) form. It then allows the right team member access to the project's intranet information. Once the job is active, only the clients and team members working on that job can get to that job. The only technical requirement is that team members must have a 486-level or higher PC, an Internet access account, and a web browser.

Externally through the Internet, you can distribute documents to other members of the project team simultaneously. You can set security parameters as to who is allowed to access what information and then allow that person to "download" the appropriate files through a WWW/FTP hyperlink. By using web forms (technically known as CGIbins) for your firm's Internet website, you can bring levels of access to your firm's site. Setting passwords gets the user deeper into your site. This security procedure brings a whole new dimension to how your firm's site is used. You may want to have certain pages/screens within your firm's site for a project X. You can give access to the project X pages to the team members, firm principals, owner, consultants, and the general contractor, and then provide restrictions within the project X pages for the information you only want those team members to see. This creates an "electronic kiosk" of project information for any team member to access at anytime, anywhere, regardless of what computer they are using or what platform they are running on.

There are two types of customers of this solution: obviously, businesses who have one set of considerations and commercial sites. This is very important because in this world of a public network called the Internet, there is going to be increasing interaction between businesses and commercial sites. It is very important that you be able to use the same techniques and exchange information with outsourced service providers, the people who are providing other value-added services to you.

## Virtual Private Networks

An emerging use of your computer network for outside communications comes in the form of a virtual private network (VPN). A VPN uses the public network (Internet) to extend your own private network: (intranet). A VPN connects two or more intranets together, keeping all information on those intranets secure, but uses the Internet as the roadway to send and receive information. VPNs use encryption when riding the net between intranets for secure transactions. Each intranet has a secure server so you are secure on both ends. One of the ways of providing a secure server is to set up a proxy server. A proxy is a server that connects or acts as a bridge between you and the Internet. You run firewall software on the proxy and whatever other authentication tools you feel are necessary to create your own "online" service. Most companies that run a VPN have a proxy server installed to get out onto the Internet or to access public sites. A proxy also can be set up to integrate common security from intranet to intranet on the VPN. This way, VPN users do not have to remember many different passwords to access VPN information. Since the user is only pointing and clicking for information, they do not care where that project information resides, so setting up universal security passwords on a per project basis is critical in making a VPN work efficiently. For example, an architect, the consulting engineer, a general contractor, and a fabricator have linked their project information into a VPN through their intranets. They each have their own specific project information that resides on their own intranet, but also have shared project information that resides on all the linked VPNs. The architect wants to see the status of a shop drawing that is being reviewed by the consulting engineer. The architect types in the password once into the project webpage on their intranet. This gives access to the rest of the VPN. So the architect clicks on "shop drawing status" on the project's webpage and is

**linked**, transparently, to the **shop** drawing status page on the consulting engineers intranet. The consulting engineer is hosting his own status page so it can be better controlled and updated in-house, but also allow others in the VPN to see the information. The consulting engineer's status page shows that the shop drawing in question is still being reviewed, with a deadline of being finished within 2 days. The architect clicks on another button to send e-mail and to post a project status update to alert the GC, and anyone else who wants the information, that the shop drawings will be ready for final approval within 2 days. The GC can then notify the fabricator to get geared up for production. This all happens seamlessly and in a way that is secure and documentable. A VPN in its best form runs like your very own private online service. Instead of posting "up" a website on the net, you "tunnel"

your information under the net, back and forth between intranets.

(Illustration Omitted)

Captioned as: Figure 1

VPNs are successfully implemented in a construction environment due to the following:

it is easy for the client to see the cost and time-effectiveness;

ease of use, and a universal system with open standards for data creation, distribution, and management;

inexpensive tools needed to create the VPN;

secure transactions and storage of data; and

information becomes a commodity.

#### VPNs Versus Traditional Information Distribution

Information push-in a typical, traditional construction project, information is either plotted or printed and then delivered. This printed media is pushed out to people and is a noninteractive record of project information.

Information pull-a project record and information management system, using the intranet/Internet VPN brings up-to-date information to team members anytime, anywhere. Those people who used to have information pushed out to them will now pull it from a web server.

In order for the process to change and improve in the best interest of the project, every participating entity gives up some of their traditional information authority.

#### VPN Enhancements

Notification of changes is produced automatically from within the system.

critical path;

the need for manual coordination decreases, as will errors, and the critical path;

improved communications of dispersed activities between project offices, design offices, and construction sites results in rapid identification of risks and implementation of corrective action; and avoidance of unnecessary travel between management and design offices and construction sites.

#### How a VPN Works

VPNs link remote sites securely over the Internet without leased lines.

VPNs forge a secure private tunnel in the very public Internet. What does that mean? Companies with high security needs, but strict budget constraints, carve out a piece of the Internet (the "tunnel") and secure it with firewalls. The "tunnel" is encapsulated and encrypted data that creates a secure path from one computer to another or from one intranet to another. In the past, remote communications meant hefty monthly telecommunications bills for private leased lines, framerelay services, or cellular connections. Certain companies have tried to reduce these costs by providing project websites, but with heightened concerns about security on the web, these online projects are few and far between.

To help these companies and to allow businesses, who in the past could not afford remote communications, a growing number of telecommunications carriers and ISPs (Internet service providers) are offering outsourced VPN services. PSINet (<http://www.psi.net>) and UUnet (<http://www.uu.net>) are popular providers of VPN services. VPN technologies are widely available, selected, and integrated rather than developed from scratch. A VPN involves project team members having access to an internal intranet or having an individual computer setup to be part of the VPN. The linked together intranets have a dedicated server, called a proxy, running as a firewall

and tunneling system to send/receive information via the Internet. The VPN can be set up with a domain and real Internet protocol (IP) addresses like, "ProjectX.com." A VPN does allow communications to go out to the Net, but only the specific traffic that needs to go out to the Internet actually goes out there, such as an e-mail to someone outside the VPN (see figure 2).

## Tunneling

To use the benefits of a VPN, encryption technology called tunneling must be used. Point to point tunneling protocol (PPTP) is the technical term when a VPN tunnel is implemented. The encryption ensures a high level of privacy in the data that is exchanged. Most connections across the Internet are not encrypted, and most data is exchanged in clear text, making the exchange vulnerable to possible viewing to whoever could open your e-mail or other type of transmission. The use of encrypted tunnels prevents any third party from "listening in" or having access to your connections. Tunneling software is dynamic, meaning it can be instantly brought up or taken down from wherever you are, connecting you to any of your preferred project sites with the click of a mouse button. Tunneling software is designed to work with virtually any brand of firewall and should offer encryption, authentication, and data integrity capabilities.

Tunneling has been used in computer networking for years. It is a method of transporting data of one network protocol inside a different network protocol. This is done by encapsulating the data sending it to the desired network protocol. The source and destination of the encapsulated traffic do not know that the data has traveled through a tunnel because upon arrival at their final destination, the data is returned to its original protocol format. All applications work normally with tunnels and without

modification. By encrypting the tunnel, you are making the data secure within TCP/IP (the Internet). This means the data traveling between two tunnel subscribers is scrambled into an unreadable and unrecognizable format, but is viewable and useable when received by the other subscribers.

## TRENDS, PROGRESSIONS, AND OPPORTUNITIES

### **Virtual Reality** Modeling Language (VRML)

The **virtual reality** modeling language (VRML) is a language for building 3-D models and worlds on the web. It's used for describing multi-user interactive simulations, 3-D **virtual worlds** networked via the global Internet and hyperlinked within the World Wide Web. VRML (pronounced Vermal) is a 3-D Internet language that is designed to meet three criteria: platform independence, extensibility, and the ability to work over low-bandwidth (28.8 modem) connections. A VRML document is a blueprint for a **virtual world**. VRML solves the problem of the high bandwidth required to do real-time 3-D graphics over an intranet or the Internet. A VRML browser downloads VRML files containing 3-D scene descriptions just as a web browser downloads HTML files containing page descriptions. The VRML browser interprets the scene descriptions and renders the resulting images on your computer. Rendering is performed through the lens of a virtual camera that moves, tilts, and twirls in response to user input. Imagine navigating your way around the web not by clicking underlined words in HTML documents but by opening doors leading from room to room in a virtual building. By clicking on objects you enable many functions to happen.

(Chart Omitted)

Captioned as: Figure 2

With VRML, authors can construct entire sites, or "worlds," with infinite space and depth. Objects in these worlds can be **links** to text, **audio**, or **video** files, HTML files or sites, or **links** to other VRML worlds. VRML **objects** can define their own behavior, like a swinging door working like a swinging door, and "participants" can see each other on the screen. You can expand your VRML model with animation, expanded multimedia capabilities, and multi-user environments. As VRML progresses, it promises to replace HTML wherever objects and spaces are more useful than words.

Designers are starting to represent their projects in this medium so that clients can appreciate the spaces on their own time, on their own computers through the Internet. Designers can share the models and interactive presentations via networks, like intranets, with others in their own company. This, combined with the increasing use of e-mail, is enabling project teams to engage in positive consultation within their organization and relate this information out to the other members of the team through the Net. For design professionals, clients get enthusiastic over 3-D images. With the use of VRML, the expensive, static nature and difficult to

change 3-D tools of the past are history. Providing VRML models from your CAD documents are a good solution to client expectations. VRML can help

facilitate a better design dialog with clients and have the added value of being used for marketing purposes.

## Java

The real breakthrough in interactivity and multimedia content delivery is a programming language called Java. Developed by Sun Microsystems, Inc., Java is being touted as the next wave in computing. Java is a powerful object-oriented programming language that uses a Java-enabled browser to run software programs that can be run on any type of computer. It was originally developed as a way for consumer appliances to talk to each other. Consumer electronic devices, such as Nintendo Game Boys, cable TV boxes, VCRs, laser disc players, stereos, and remote controls are all made with different CPUs. If a manufacturer wanted to add functions or features to a TV or VCR, they are stuck because they are limited by what the hardware, and its wired-in programming, allows them to do. This, coupled with the fact that the chips used by many of these devices were limited in program space, suggested a fresh approach to software programming that might allow these devices to communicate. Thus, Java was born.

Java "applets," or miniature applications, can be used as word processors, calculators, and spreadsheets that are activated when your web browser "hits" those files. A Java applet can be included in an HTML page, much like an image can be included. Other applets control audio, video, animation, spell checkers, chat/conference utilities, intelligent agents, presentation viewers, and scores of other useful tools. Like other advanced web tools, Java is activated by a special HTML tag. Unlike gateway scripts like CGI, which require information on the server to run applications or process input, Java enables developers to create content that can be delivered to and run by users on a user's computer. A well-done Java application on a single webpage can engage a user for a long time. Rather than just providing text, sound, images, or videos to passively observe, a Java page can offer a place to work, learn, or communicate and interact with others in a way that isn't necessarily based on going somewhere else on the web through hyperlinks. In this way, Java turns the web into a software delivery system in which users have things to do rather than just places to go. This offers the potential to transform the surfing behavior of web users into one of working and learning in new interactive environments.

How does Java work? Java makes web browsers smart enough to interpret and execute the content, instead of relying on servers to provide information and functionality. When downloading a Web page that contains the special hypertext tag called "APP," your web browser knows that a special kind of Java program called an "applet" is associated with that page. The browser then downloads a file of information that describes the execution of that applet. This file of information is written in what are called byte-codes

(we'll just call it code). Your web browser interprets this code and runs them as a program on your computer. All of this downloading and execution happens automatically, which makes this a transparent activity to you. When your browser hits a Java-enabled web page, here's what happens.

The HTML document is returned to your browser. The document contains the APP tag, which identifies the Java applet.

The corresponding applet code is transferred to your computer. This code has already been created and formatted. This is called compiling by computer geeks.

Your browser interprets the codes and provides the display on your computer.

You can now have further interaction with the applet without further downloading from the source web server, because the code contains all of the information necessary to run the Java program.

So now, instead of the server computing a result, your browser becomes the environment for computation. Today's web browsers all allow you to view and use webpages that use Java content. Java is gaining popularity as a way of breaking free of the desktop-centric Windows, Macintosh, and UNIX environments. Java-fever has led to the development of network Computers (NC) by major hardware computer companies.

Java developments within our industry are only starting to emerge. U-value (heat loss) calculators are being developed as webpages that interact with data available on the Internet to product manufacturers' website data. By being able to perform this function, you can then take that program and edit it to your own requirements and use it within your company. Another Java development available today on the web is a Java-based forecasting calculator based on a product called Lead Consultant. The Java program is based on a knowledge-based cost-modeling system. Lead Consultant is available at the Building Information Warehouse (<http://www.biw.co.uk>) and was developed by Engineering Technology (<http://www.biw.co.uk/et>) in the United Kingdom.

VRML/Java Costing Models: W.S. Atkins, United Kingdom

Bringing all of these seemingly disparate Internet technologies together to assist with costing is a challenge. UK-based WS Atkins is meeting this challenge. WS Atkins is a multi-disciplinary consultancy employing

approximately 7,000 people worldwide. A corporate decision was made to advance the design capabilities of the company into object oriented modeling systems and integrated engineering systems. The object oriented modeling (OOM's) group was set up in the information technology department. The strategy was to integrate the design processes and of all groups working on projects and this could only be done from a neutral standpoint. OOM's started by implementing a new modeling technology, called Reflex, running on a Silicon Graphics (SGI) platform. The machine had been set up

as one of 6 web servers running on Atkins existing network and intranet. The importance of the web server was to make information available to others work of the group as it happened and enable feed back without the need to be given a personal demonstration.

Planning design competitions have become a high risk venture with even the most resource rich companies being careful in how they participate. This has lead to rapid prototype schemes and assess their viability in compliance with strict planning criteria, massing, mixture, overall site development area, cost to build and income. The problem of many architects and planning designers is the scaling off detailed planning drawings to work out if they have complied with the criteria to only find out that they need to redesign the plan to conform. The OOMS team were asked to consider how they could help in the process. While only expected to deliver a visualization of any scheme and VR world to explore, the OOMS project had a mandate to deliver more. Within the modeling environment of parametric elements the team devised two objects. The first object was a generic building outline. This model could then be placed in the second object, the site plan. The building

**object** had additional information  
**linked** within it, so it was possible to alter its appearance.

The first task was to build the VRML site model with all associated zoning data. The site model included the excavation as part of the model. Building design models were then created. These models were then placed into the site. See figure 3.

When the building model was placed into the site model, it automatically wrote out an HTML file summarizing the data such as gross floor area and gross volume. See figure 4.

This VRML solution allowed a function that represented the whole development as a schedule of all placed massing components as a colored bar chart within the model and provide an approximate cost of construction and rental income. See figure 5.

A graphical representation of the zone and the building model was also included by writing out a 3-D object file that could be displayed with the HTML page via a standard Java applet that allows model rotation in 3D. See figure 6.

The system allows you to view the model without the exterior "skin," showing the floors. This can allow for a better understanding of volumes and design intent. See figure 7.

It also allows you top view the entire model as a wireframe for better insight. See figure 8.

By inputting simple information like, that number of floors, zone type and floor to floor heights into a web-based database table, the system can



return the following:

material finish for the floors to identify a schematic zonal color;

transparent material color to shade the massing of the zone;

cost to build per meter squared; and  
rental income per meter squared.

This data was written directly to the web server and therefore is accessible to other members of the design team. Not only was it a simple application that the designers could use and develop but it took away the troublesome task of seeing whether they had met the development and mixture brief.

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As a further enhancement to the design, several VRML models of the scheme were exported and created integrated into a final presentation of the site. To cater for performance, the models were built in 3-D displays with varying levels of complexity. While this application development was originally intended for site design it was felt that it could also be applied to single building developments. Another development was to be that of writing the HTML files with Java calculators to enable further manipulation of the cost's and rental incomes that could be linked to a standard developers budget calculator formula. See figures 9 and 10.

By humanizing technology and allow greater access to shared data, Internet-based 3-D modeling, in the form of object oriented VRML, is the most efficient way to represent complex data. It provides a solid way for multiple companies to be able work together over a period of time and still manage to keep the big picture in focus [1].

By bridging the old gaps of information flow within the project, by sharing and linking information within a project team, by integrating Internet technology and by using the proper IT tools, AEC professional's have an opportunity to provide greater control of project information and allow the project team to deliver a project to a client, on-time and within budget. Implementing business environments, like Extranets, are the result of

examining our business workflow structure. The success or failure of this implementation depends on whether we meet the challenge of managing our own information efficiently. In today's construction industry, if you don't manage your own information, someone else will. The future has come in the abstract form of an information resource and communications tool called the Internet. Are we, as an industry, prepared to harness its power?

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